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## SPECIAL ARTICLE.

### NOTE ON THE NEWLY RECOGNIZED SUGAR-CONTROLLING FUNCTION OF THE SUPRARENAL GLANDS.

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In recent publications\* it was shown that extracts of the suprarenal gland injected within the peritoneal cavity of dogs give rise very regularly to the presence of considerable amounts of glucose in the urine. It was also shown that solutions containing the substance known as adrenalin act especially and probably exclusively upon the pancreas by imparting to its cells a stimulus which in some way brings about an increased conversion of hepatic glucose into sugar. The character of this stimulus is at present impossible to define, but it is a striking fact that reducing agents like carbon monoxide, sulphuretted hydrogen, benzyl alcohol and piperidine are much more likely to give rise to glycosuria when applied to the pancreas than are oxidizing agents like chlorine water, bromine water, permanganate of potash, or nitric acid. It was found that hydrocyanic acid, which poisons cells in such a way as to prevent them from taking their share of oxygen from the arterial blood, is capable of bringing on a glycosuria when applied in very weak solution to pancreatic cells. This fact, when considered in relation to the noteworthy capacity of reducing substances to cause glycosuria, strongly suggests that this disturbance in metabolism is in some way dependent on interference with the oxidative activities of the cells of the pancreatic gland.

It may be that the various glycogenetic poisons act chiefly on the nerve-endings in the pancreas. We know that the sugar called forth by the application of adrenalin comes from the liver, and the rapidity with which it appears makes it likely that the hastened conversion of glycogen into sugar occurs through the mediation of the sympathetic nervous system.

At first sight it seemed likely that the various local applications which were followed by the excretion of sugars were comparable in their action to total extirpation, for it seemed that they temporarily inhibited that function of the gland which prevents the excretion of sugar under normal conditions. It was soon evident that such a view is untenable. The proof of this is as follows: If one cuts transversely through the pancreas and duodenum, so that the separated por-

tions of the gland have their only vascular connection through the general circulation, the application of a weak potassium cyanide solution to either portion of the pancreas is still followed by moderate glycosuria. If we assume that the entire gland is really affected under these conditions we must also assume that a portion of the poison passes from the painted end of the pancreas to the unpainted end by way of the general circulation. But it is easily shown that one can inject into the femoral vein an amount of potassium cyanide far in excess of that required to cause glycosuria when painted on the pancreas, without causing the excretion of any sugar whatever. The poison therefore does not act through the circulation. It is so quickly altered in its chemical constitution that it does not reach the pancreatic cells as potassium cyanide. Hence we must assume that when the cyanide acts on one end of the divided pancreas it does not have any influence on the remaining portion but acts solely by means of this restricted influence. We know from many observations on extirpation of the pancreas that the presence of one intact half of the pancreas is sufficient to prevent the onset of glycosuria. Thus we have in the phenomenon of glycosuria after the local application of potassium cyanide something quite distinct from a total suppression of function.

When the pancreas is severed into a larger and a smaller portion (representing, say, two-thirds and one-third of the gland), the application of one c.c. of adrenalin chloride (Takamine) solution (1-1,000) to the smaller portion is followed by the appearance of sugar in the urine. We know that when adrenalin is injected into the circulation it is capable, unlike potassium cyanide, of producing glycosuria; hence this method of experimentation does not enable us to exclude some action of the adrenalin upon the unpainted piece of the gland through the general circulation. The cyanide experiment, however, makes it in the highest degree probable that such action upon the unpainted gland is unnecessary for the production of a glycosuria. In other words, the cyanide experiment indicates that the stimulation of one part of the pancreas by adrenalin is sufficient to call forth the excretion of sugar.

The observation with adrenalin suggested to me that the organism possesses a hitherto undiscovered mechanism by which sugar metabolism is largely controlled under physiological conditions.\* It seems to me that if relatively large applications of adrenalin to the pancreas call forth temporary glycosuria, slighter influences of the same sort may serve as a continuous but variable physiological stimulus to the pancreas to call forth the

\*On Adrenalin Glycosuria and allied Forms of Glycosuria due to the Action of Reducing Substances and other Poisons on the Cells of the Pancreas. *Medical News*, May 10, 1902. For a somewhat more extended account of adrenalin glycosuria see Virchow's *Archiv*, Band 169, 1902.

\*The word glycoesthele may be employed as a synonym for sugar-controlling.



sugar that is constantly required by all cells in which metabolism is active. It seems natural that the suprarenal gland should be the means by which this controlling influence is exerted, since it may be assumed that this organ is constantly producing and liberating a secretion containing a substance allied to adrenalin.

I have now put this hypothesis to the experimental test, and have obtained results which firmly establish the sugar-controlling influence of the suprarenal gland. This function of the suprarenal is of so great importance to any understanding of the pathology of human diabetes that I consider it desirable to call attention to some of the facts that have come to light. Full protocols of experiments will be given in subsequent publications. At present it is intended merely to indicate the character of the evidence upon which the newly recognized function of the suprarenal gland is based.

*Massage of One or Both Suprarenal Glands is followed by Glycosuria.*—It is suprarenal gland is constantly making a secretion containing a substance which enters the blood and stimulates the pancreas to call forth sugar from the liver it is reasonable to expect that the influence which stimulates the suprarenal to excessive secretion will induce glycosuria. It was therefore resolved to try the effect of intermittent massage upon the suprarenal gland, in order to express into the blood a larger amount of the substance in question than would enter it under physiological conditions. The experiments were made exclusively on dogs. After opening the peritoneal cavity by a median incision each suprarenal gland was in some cases intermittently and moderately compressed between the thumb and forefinger for a period of about five minutes. Towards the end of the manipulation the glands were subjected to considerable compression and the structures of the gland were felt to give somewhat. The operation is very easily carried out and the compression is readily limited to the region of the suprarenal glands.

As examples of the effects of intermittent compression the following may be cited: A normal dog weighing 18 pounds was subjected to the operation just mentioned. The urine before the operation was free from sugar and the blood at this time contained 0.19 per cent. sugar. One and one-half hours later the urine contained 4.7 per cent. sugar and the blood-sugar had risen to 0.27 per cent. Nine hours after the operation the urine contained only a trace of sugar. In another dog, weighing 17¾ pounds, massage of the suprarenal glands was followed after one and a quarter hours by three and five-tenths per cent. sugar in the urine. In a third animal massage of one suprarenal gland led to the excretion of urine containing 1.25 per cent. of sugar three hours later. In all three cases sugar quitted the urine within 24 hours of the time of operation.

The experiments closely resemble in their results the effects of applying weak solutions of adrenalin chloride to the surface of the dog's

pancreas, and it is difficult to believe that their significance is not similar. The application of pressure to the suprarenal gland probably squeezes into the circulation an excess of the blood-pressure-raising constituent of the internal secretion of the gland, and this constituent is probably responsible for the glycosuria observed. The glycosuria is doubtless determined largely or wholly by the action of this constituent on the cells of the pancreas. In a later paper I shall report on the influence of heat and other protoplasmic stimuli on the adrenals.

*Removal of the Suprarenal Glands or Ligature of its Vessels is Followed by a Rapid Decline in the Sugar of the Blood.*—The results obtained by intermittent compression of the suprarenals are suggestive of temporary overaction of the gland from mechanical causes. If such overaction leads to glycosuria one would expect that removal of the glands or ligature of their vessels would be followed by the opposite condition; namely, a decline in the percentage of the sugar in the blood. Experiments showed that this is indeed the case. A dog weighing 19¼ pounds was etherized and bled for sugar determination in the blood (modified Allihn method). Then the vessels of the right suprarenal gland were ligatured. The left gland was removed. Duplicate determinations of the blood-sugar before operation gave .217 and .211 per cent. of sugar. Five and a quarter hours after operation duplicate determinations gave .112 per cent. and .107 per cent. of sugar in the blood. In another dog, weighing about 22 pounds, the blood-sugar fell in six hours from .187 per cent. to .16 per cent. after a similar operation.\* In a third instance the conditions were peculiarly instructive. A dog weighing 23 pounds suffered removal of the left suprarenal gland and ligature of the vessels of the right gland. The urine just before operation was free from sugar, and the blood contained 0.20 per cent. sugar. In the manipulation attendant on the removal of the left gland considerable pressure was unavoidably exerted on the organ, and it was remarked at the time that one might expect some sugar in the urine as the result of this unintentional pressure. Four and a quarter hours after operation the urine contained 0.3-0.4 per cent. of sugar and the blood-sugar was 0.29 per cent. Nine and a half hours after operation the urine contained about 0.2 per cent sugar and the blood-sugar had dropped to 0.16 per cent. Twenty-four hours after operation the urine contained no sugar and the blood-sugar was 0.14 per cent. Seventy-six hours after operation the blood-sugar was 0.10 per cent.

During the early days of inanition there is a gradual and slight fall in the sugar of the blood, but the diminution is too small to explain the results which have just been cited. I can see only one reasonable explanation for the declines which have been mentioned. The suprarenal glands make a secretion which is capable of stim-

\* These figures do not fully represent the fall in blood-sugar, for owing to a technical slip a portion of the blood-sugar from the first bleeding was lost.



ulating the pancreas in such a way as to call forth an increased conversion of hepatic glycogen into sugar. The removal of these glands or the ligation of their vessels deprives the organism of a substance which habitually serves as a physiological stimulus to the liberation of glucose into the blood. The blood-sugar falls because it is used up by the cells more rapidly than it is liberated.

I do not wish to be understood to imply that with the removal of the suprarenal gland the organism wholly loses its ability to make sugar. That this is not the case can be shown by a very simple experiment. The suprarenals of a dog were excluded by vascular ligation. After three hours the bladder was emptied and the dog received one gram of phlorizin subcutaneously. Within one hour the urine contained more than ten per cent. of sugar. It occurs to one that the low content of the blood in sugar after exclusion of the suprarenals may contribute to the early death that follows the operation. Probably all the active cells of the organism require sugar for food, and it is conceivable that when the supply falls below a certain level the cells of the nervous system are no longer able to functionate. It is of course impossible to distinguish sharply between the cell-disturbances that arise from deprivation of the blood-pressure-raising stimulus of the suprarenal secretion and those which follow deprivation of sugar.

*On the Excretion of Sugar after Total Extirpation of Pancreas preceded by Exclusion of the Suprarenal Glands.*—If it is true that the suprarenal gland is an organ which controls carbohydrate metabolism in the sense that it furnishes under variable nervous stimulation variable quantities of a secretion capable of calling forth larger or smaller amounts of hepatic sugar through a specific action upon the pancreas, one would expect the carbohydrate metabolism after the elimination of the combined suprarenal and pancreatic functions to differ from the carbohydrate metabolism after elimination of the pancreatic functions alone. One might predict from the facts which I have brought to light that the organism would excrete less sugar after elimination of the combined pancreatic and suprarenal functions than after the elimination of the pancreatic functions only, for the reason that the capacity of adrenalin preparations to induce glycosuria appears to depend largely, if not exclusively, on the presence of the pancreas. One might even suspect that the removal of both pancreas and suprarenals would render pancreatic extirpation inoperative in the production of glycosuria. The facts at present known, although inconclusive, are in harmony with such a forecast. I extirpated the pancreas *totally* in four days soon after the ligation of the suprarenal vessels on one side and the ablation of the suprarenal gland on the other.\* In every instance the urine (previously normal) contained a small quantity (0.1-0.3 per cent.)

of a reducing substance (dextrose-glycuronic acid?) in the collection immediately following the operation. But it is to be emphasized that this reducing substance *instead of increasing after the operation rapidly lessened and left the urine entirely free from any reducing substance.* Two of the animals lived 10 hours. The others survived operation a shorter time. In each instance the peritoneal cavity was found filled with a serosanguinolent fluid which did not clot.

I have many times practised total extirpation of the pancreas and have never failed to find sugar in the urine within two hours after the operation. The percentage of sugar has always increased rapidly within the first 10 hours. Some observers, however, state that glycosuria does not always appear during the first hours. It is possible that if my four dogs had lived 24 hours or longer sugar would have reappeared in the urine, but I fail to understand why the urines in these cases behaved as they did unless it is because the suprarenal functions had been eliminated. I shall draw no conclusions from these experiments until their results have been repeatedly confirmed. It is especially important to remove the pancreas, obtain glycosuric urine, and then extirpate or tie off the suprarenals.

*Does Codeine Repress Human Glycosuria by acting upon the Suprarenal Gland or its Internal Secretion?*—The well-known fact that codeine diminishes the excretion of some diabetic patients; at least temporarily, suggested an inquiry as to its method of action and led to some observations of considerable interest. It was found that when an aqueous solution of codeine is mixed with a solution of adrenalin in suitable proportions the addition of a drop of a ferric chloride solution does not cause the appearance of the transitory emerald-green reaction (Vulpian's reaction) but gives a characteristic maroon coloration which is very striking. I take this to indicate that codeine enters into chemical union with adrenalin which alters the chemical properties and probably the physiological action of the latter. It is a noteworthy thing that pyrocatechin, a trihydroxyphenol which has been regarded by some investigators as the active principle of the blood-pressure-raising constituent of the suprarenal gland, yields a similar reaction when treated with codeine.\* I shall not at present enter into further details as to the significance of these reactions, which so far as I am aware have never been described. I will add, however, that codeine appears capable of rapidly lowering the blood-sugar content of normal dogs. Whether these facts indicate that codeine represses human glycosuria by uniting with a product of the suprarenal gland is of course an open question. There are some facts which speak in favor of this idea and others which seem opposed to it. Detailed observations on this interesting point will soon be published.

I shall not undertake to discuss here the bear-

\* In each instance the right suprarenal was thrown out of function by ligation of its vessels: the left suprarenal, which is more readily reached, was then removed completely.

\* The color in this case is violet. Pyrocatechin alone gives a green color with ferric chloride. The reactions of many phenols with ferric chloride are altered by allowing them to act on codeine before the addition of the iron salt.



ings of the sugar-regulating function of the suprarenal glands upon the physiology and pathology of carbohydrate metabolism. The recognition of this function will throw new and important light upon human diabetes, and this leads me to make this brief report upon my studies at the present time.

### ORIGINAL ARTICLES.

#### REMARKS ON INTRATHORACIC PRESSURE, WITH THE ILLUSTRATION OF THE AUTHOR'S METHOD OF LUNG IMMOBILIZATION.\*

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THE reciprocal relation between the air which flows in the pulmonary spaces and the blood which courses through the vessels within the thorax is a matter worthy of special study. There is no doubt about this reciprocal relation, for both the air and blood are always coincidentally influenced by the varying pressure states which accompany muscular exertion, vocalization and breathing. If the conditions are such that one of these fluids is embarrassed in its free movement the supplemental pressure goes to the other fluid, which is correspondingly quickened in its action.

If the tissue resistance to pressure is increased on one side of the chest, through abnormal processes as in fibrosis, the more flexible of these fluids, i.e., the air, will first respond to the demand for expansion, and on the other side of the chest, where there is less resistance. In health and disease the interdependence of respiration and blood circulation—the heart and the lungs—is thus apparent.

It is not, however, my present purpose to try to show why the face and periphery of the body generally are congested in hill-climbing, or how the same parts are blanched in chill, or heart-failure, any more than it is to seek to fathom the blushing of the heart-throbbing maiden or the paling of the frightened criminal. But it is my purpose to call attention to some of the air-pressure states which characterize various diseased conditions of the lungs and pleura, and to try to differentiate the indications for treatments necessarily as various as the diseases. For between the truism that the life of the lungs is its use and that other truism that to cure a diseased organ you should, if possible, put it to rest, there is a broad field in which there is a better choice than either horn of the dilemma. We must recognize the difference between an *acute febrile toxemic congestion*, bordering upon strangulation of a part, necrosis or suppuration, and a *chronic afebrile induration*, with catarrh, or even pulmonary excavation, but with tolerance and elimination already in a great measure established. Where between these two extremes, wherein the great majority of invalids at health-resorts are to be found, will you take your stand as to the interdiction of muscular exercise, high altitudes and

pulmonary gymnastics? Our great fault is the failure to recognize, in discussion of the desirability of exercise, the many characteristics of a case of disease, as well as its environment. No one should take a decided stand without stating the kind of case he refers to; and unqualified opinions are necessarily of questionable value.

The misunderstanding between opposing disputants is largely due to not limiting the harmfulness of exercise to severe or very febrile cases. The line of differentiation may be questionable, but nevertheless the general argument has of late been a too wholesale condemnation of exercise. I wish to show that the more nearly we can imitate nature's method in our curative efforts the surer we shall be that we are on the right track. Nature's method of cure in chronic pulmonary disease not only involves the contraction and scarring over of diseased areas, but the coincident compensative distention of surrounding healthy or less affected portions. The expansion of the air, because of its changed temperature when inhaled, as in cold climates, takes place in the direction of the least resistance.

Dr. C. Theodore Williams instanced the very general result of vesicular emphysema adjacent to healed lesions in cases of pulmonary tuberculosis arrested or cured in high altitudes. Despite the varying degrees of atmospheric pressure within the lung, these are examples of healing by contraction, nor has the meddlesome injection of nitrous-oxid gas into the pleural cavity been employed. Those of us who hail from high altitudes have seen hundreds of persons recover while living active lives in elevated resorts. This is because of the contraction—nature's natural shrinkage—of the affected lung, while the other lung shows ample compensation for this deprivation. In a case I have in mind there remains, several years after arrest of tubercular disease of the right lung, only a one-half-inch movement of that side, while the other, the left side, has acquired an expansion of three inches.

The views in contravention of the exercise and altitude treatment found, at the meeting of the American Medical Association in 1901, such a pronounced champion in our fellow member, Dr. Norman Bridge, through his paper on "The Proper Management of the Tuberculous Lung," that I cannot do better than take his points of argument for our discussion.

That phase of his article which seems to invite discussion is the do-nothing policy advocated. He says: "It is unwise and unfair to tax a consumptive with the duty of watching the manner of his breathing. To be quiet and protect others from his expectoration is about all we ought to ask him to do."

Since when has it been wrong for the physician not only to determine the causative relations to tuberculosis of defective and insufficient breathing habits, but also to do his best towards correcting these faults through instruction of the patient and by urging the systematic practice of appropriate breathing exercises? Is it not rath-

\* Read before the American Climatological Association at its Los Angeles meeting, June, 1902.



er the physician's bounden duty to determine, if he can, the errors of respiration and, at the earliest practicable moment, to set in motion the remedial measures which will counteract the evil? Indeed, the improvement in recoverable patients seems to bear a very close relation to their knowledge and ability to breathe properly, and to live the kind of outdoor life that stimulates healthful respiration.

Let us analyze this author's objection to the use of a tuberculous lung. He says "shallow breathing is important and beneficial for a tuberculous lung that has to breathe; better than that is no breathing. The good rule to put a sick organ at rest finds no exception here; quiescence gives the forces of nature the best chance."

I recognize no ground for such argument except it be limited to a lung in active inflammation, or during hemorrhage, or when rapidly breaking down. I fail to find any such limitation in this paper. The initiatory and infiltration stages are presumably included. One has to object to this, though one admit, as I do, the reasons given and necessity for chest immobilization in advanced or special conditions. I heartily agree with his premise that "quiescence of the lung favors the limitation of the disease by fibrosis around and within the part involved with the smallest amount of fibrous tissue, and the smallest amount that can be effective is desirable." Sometimes (and in unfavorable atmospheres) it is true that "deep breathing does violence to the fresh, new fibrous tissue, and so probably stimulates the further and excessive growth of it."

But the life and healthfulness of a lung depend upon its use, and the curtailment of its natural function in any part should be looked upon as a compromise, supplemented, if possible, by an equivalent increased use of unaffected portions. The chief consideration then for chest immobilization is that it can be unilaterally applied, and that the other lung can do the supplementary work thereby required by it. If both lungs are chronically affected, or nearly so, we are correspondingly handicapped; but, even then, I think so much of the method of unilateral chest immobilization (described later) that I would use it in localized hemorrhagic infarction, pleurisy and excessive softening. In pulmonary hemorrhages I have found it of signal service, also in steadying and stiffening the thorax in fracture of the ribs. In the effort to limit cavity formation it has been quite as useful in performing its chief function, which is to limit fibrosis to the region needing it and to the extent necessary. But this benefit and the stated reasons for it give no ground for the statement, "There is no particular need of or significance in the popular efforts in the real or supposed expansion of the chest by deep breathing and wide movements of the arms," which the author claims are ineffective to "ever expand the chest anyway, since the shoulders glide over muscular masses around the cone of the chest without changing its diameter or its position. That they can so act is a lay-

man's theory," he says, "founded in poor knowledge of anatomy."

Indeed, we are surprised that a non-recognition of the important relation of the anatomical structure of the thorax to arm movements and chest exercises should be laid alone at the door of the "layman!" We physicians should more generally recognize the relation of the pectoralis minor and major, the latissimus dorsi and the intercostal muscles to respiration, and the normal function of respiration, its limits and conditions, so that we may consistently and steadily try to bring back the diseased lung to its normal state. After 30 years of practice under conditions calculated to enable one to form a fair judgment, the hobby of "rest" for the lungs appears to me to be very generally overridden. Numerous articles advocating the do-nothing policy go unrebuked because it is all right for a doctor, not knowing anything better to do, to hedge against overaction. He ought, however, to know when and how far exercise is admissible, and the great and inestimable value of *systematic progression* of both breathing and chest exercise. Substitute walking, massage, etc., if you like; but adjusted and proportioned pulmonary gymnastics constitute, up to a certain point, one of our best aids in the arrest of tuberculosis. A personal knowledge of each individual case should determine the degree of exercise which is advisable or permissible.

In harmony with such extreme views, this essayist has something to say against altitude. To quote: "Altitudes do not help the sick with lung tuberculosis by expanding to a greater degree the air-vesicles. The theory is fallacious, unphysiological and wrong. The benefits of altitude must be explained on the theory of the increased number of red blood-corpuscles, even if they are reduced in size, and of attendant and other advantages to the general nutrition of the body. These advantages are not discounted when we try to explain them on the natural ground of known physiological changes, instead of upon supposititious grounds which are founded in error."

This is indeed ingenious, but how lacking in proof. For instance, is it correct or logical to admit the increase in number of the red blood-corpuscles and "other advantages to the general nutrition of the body," and at the same time to deny their relation to the increased amount of air consumed and the necessarily consequent greater expanding of the air-vesicles? One may admit that there is an increased amount of static electricity in the altitudes, and an easier conversion there of oxygen into ozone, either within or without the blood. That, however, does not controvert the established law that the amount of air used is proportioned to the lessened barometric pressure of the given altitude. No, it is unreasonable and illogical to try to dissociate the complex effects of lessened atmospheric pressure (especially including the greater distention, of the air-cells due to the greater amount of air used) from those "known physiological changes" which every observer properly attributes to altitude. Similar



physiological changes are produced, though not in the same degree, by those exercises and methods of breathing which *do* produce distention and uniform use of the air-vesicles, showing that all these aids to healthful pulmonary activity are inseparable and support each other as conditions of the cure. Of course altitude and exercise intensify the influence of each other. However, the wholesale denunciation of exercise is strained when it is also made to include opposition to altitude. This is proved by the fact that when quiet, sitting or lying, even an invalid's respiration and pulse are not much accelerated a mile above the level of the sea. There is ordinarily less respiratory difference between sitting still and walking at the rate of two miles an hour at the sea-level than there is between lying down at the sea-level and at 10,000 feet elevation.

The opposition to a successful and beneficial method of breathing for the consumptive—exhalation sustained against pressure—is quite as groundless (for curable cases) as that to altitude and exercise. To quote again: "Breathing through diminutive contrivances of tubes with large inlet and smaller outlet, so as to produce increased pressure within the chest to expand the air-vesicles, is harmful if any effect at all is produced." Has the author ever measured the results of such exercise, long and systematically practised, and judged of them by the spirometer and manometer records before and afterwards? He does not appear to appreciate the influence upon the blood-circulation which is produced by the increased pressure within the thorax, in the method above referred to, forcing onward and outward to the periphery the sluggish currents within the lungs. Nor does he appear to appreciate the concurrent even and general distention of the air-cells, which to a degree can be borne with comfort by the weakest invalid. In fact, there is a persuasiveness in the mild stimulation of previously unused air-cells which makes this method of pulmonary gymnastics usable by patients who are too weak to take other physical exercise. As to any harm resulting, I have employed the method in hundreds of cases and know that that is impossible if discretion and reason are applied in its use.

The opinion expressed by Dr. Briggs and others in regard to pulmonary exercise must of necessity arouse opposition on the part of those of the profession whose experience in the treatment of pulmonary diseases in high altitudes does not corroborate the arguments of these opponents of exercise. The "pity" is on their side and not on ours. Think of the lives that are lost or frittered away in the crowded cities of the East, when an active life out in the country or upon our Western plains, reasonably undertaken, would assure an arrest of the disease! Is it not to be feared that the medical profession is coming to be "a party to the crime" in harboring the disease in its original haunts, by keeping tuberculous patients in closed sanatoriums or hospitals. If this must be done, let the ways of Dr. Wal-

ther's Detweiler institution in the Black Forest in Germany be followed. Going through the main building of that institution last summer, I saw no confinement of the sick to inaction indoors. They were all out on the hillside, or up the narrow cañon, presumably active according to their condition and ability. When they did return to their rooms, it was to the equivalent of an outdoor life, for the window-sashes were removed from the whole building.

I heartily agree with the contention that public speakers with pulmonary tuberculosis should quit that vocation. Some of my most unsatisfactory patients have been preachers with laryngeal complication. Perhaps the forcing of the air outwards, to assist a weak vocalization, has something to do with the greater lung-shrinkage and increased fibrosis which characterizes these cases. A reason can be seen in their experience for some different and opposite kind of pulmonary gymnastics than that which their profession induces, *i.e.*, that kind which *would* distend the air-vesicles.

Now, as to immobilization of the diseased lung, when needed, I do not indorse Dr. Briggs's conclusion that "gas-inflation of the pleural cavity, according to the method of Murphy, is undoubtedly the best way to accomplish this purpose when it can be done." There are apt to be too many concealed hindrances to its success, especially bilateral extension of disease and adhesions on the affected side. The four cases I have had under observation in Colorado, on whom this operation had been previously tried, were left in an unfortunate state because of adhesions, extensive fibrosis and shrinkage of the affected lung. Two of them remained in a mental state of bitter opposition to the operation. The substitute method of strapping the chest described by Dr. Briggs is, I think, too cumbersome and indefinite in sustained effect, the plasters, as admitted, having "a tendency to creep or slide."

I will give the method of strapping the chest which I have employed for years as simplified up to date. We can obviate the special spreading of traction adhesive plasters, formerly deemed necessary,\* by the following use of the moleskin adhesive strips as manufactured in pieces seven inches wide. For a small person one and one-half feet will answer, and for a very large chest two feet or more of a ten-inch width is preferable.

First, without removing the protecting muslin from the adhesive side, cut through the center lengthwise, diagonally, as shown in the drawing No. 1 (X to Y), the small ends left being about two inches wide.

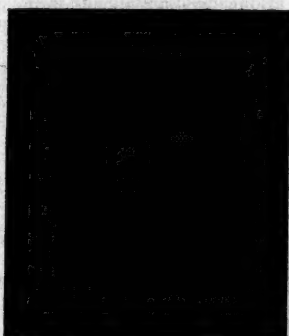
Then strip back and remove the muslin from A to B and C to D. The application is made by lapping the adhesive ends A and C over each other in the infra-axillary space of the side of the chest to be immobilized, the small ends extend-

\* Transactions Colorado Medical Society, 1898-99: "Traction Plasters for Temporarily Contracting the Affected Lung, in Lieu of the Murphy Operation," and International Journal of Surgery, July, 1899: "Air Limitations to Intrathoracic Surgery."



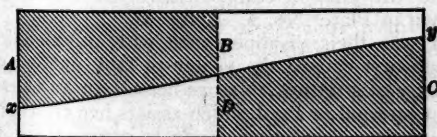
ing diagonally upward, front and back, to the point of the opposite shoulder. For a fulcrum, a collar is made say of cheese-cloth in which a little cotton is rolled, or of canton flannel with fuzzy side outward. This is to fit over the shoulder. Now with safety-pins you can cinch up the non-sticking ends of the plasters to the collar so as to make a harness which will stay just where you put it, and as tight as the patient can comfortably bear it. You can obtain practically complete rest for the diseased lung, the movement of that side of the thorax being nil, and that of the diaphragm and mediastinum being minimized to very little. I have left on these traction plasters for two weeks. Where necessary to keep up the effect, I have either applied new ones or had a canvas jacket made on similar principles—with fulcrum collar and diagonal straps, and with lacings or buckles in front. Where the attending physician fears to trust a too ambitious and reckless patient, as after a hemorrhage or abscess, this strapping gives the needed immobilization, and is very satisfactory both to doctor and patient.

in lower right mammary region. From April to the end of December the patient was only slightly improving. Then he responded so well to the tuberculin-test that treatment with the watery extract was instituted and kept up until February 22 following. There was some contraction of the right cavity and evident healing of the affected portion in right inframammary region. A gain of 19 pounds in weight during the previous winter and general good feeling led the patient to decide to return to Chicago March 22, 1901. This was for family and business reasons, and against my advice. Health was good until August, when, having taken a bad cold, coughing seemed to open the spot in the base of the right lung, for, with the resulting profuse hemorrhages, scar tissue was expectorated and a small excavation left there. He remained in a weak condition, fearful of more bleeding if he did anything or tried to come back to Colorado. After being quiet or housed several weeks he came back to Denver about the middle of October. His gait was slow, and he was bent over to the right,



Front and rear view when applied.

In previous papers the arrest of pulmonary hemorrhage (properly located), the contraction of pulmonary excavations and the relief of pleurisy have claimed attention. In closing this paper, an instance of where the limiting and fixing of fibrosis seemed to demonstrate the utility of this method will be given.



Scheme for preparing plaster.

An attorney, aged thirty-one, came from Chicago to Colorado in April, 1900, having had right pleurisy two years previously. This was undoubtedly tubercular, for on physical examination an excavation was found in the apex of the right lung, and the previous August he had had a hemorrhage from near the same pleuritic spot

to favor the affected spot. It was at once clear to me that strapping with the traction plasters would give courage and needed support, and limit healing fibrosis to the right degree. This was done and the application was most successful. Improvement was satisfactory in every way. The plasters were worn two weeks.

A similar hemorrhagic experience this last April, due to this patient's self-inflicted confinement and overwork at his desk, led again to the strapping of his chest, by which it is hoped an increase in the size of his excavation has been limited.

#### STRICTURES OF THE MALE URETHRA.\*

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To call the attention of this society to as time-worn a subject as stricture seems almost unnecessary. The paper is short, however, and as far as

\* Read before the Celtic Medical Society, April 24, 1902.



possible states the result of personal observations.

The definition of stricture may be omitted. You have probably all treated them. Until 30 years or so since they were pretty generally treated by dilatation, and cutting was not so frequently resorted to as later on. Then, through the invention of improved methods of incision and to a slight extent by divulsion and electrolysis, dilatation was in many cases replaced. Recently the pendulum seems to have swung the other way and cutting operations for strictures are not nearly so commonly performed—fortunately, I believe. Divulsion at least, I am glad to say (as an example of its bad effects, I have observed in one man a pus-kidney with a resulting chronic sinus follow its adoption) has been pretty completely done away with.

Still articles have recently been written recommending the incision of some dilatable strictures preferably by means of external urethrotomy, providing they are hard and extensive and in the urethra of poor men who are liable to be careless about having the canal kept open if gradual dilatation is trusted to. The writer takes exceptions to such views and will speak concerning this farther on.



Plate No. 1 represents the first condition—that of acute inflammation. It is a transverse section through the urethra of a man about thirty, who died from acute alcoholism. He had an acute urethritis of about six days' duration. The urethral opening is shown by the space pointed to by the line marked A. The infiltration of the inflammation is, of course, shown in the shot-like appearance around its edges. A high enough power would show the gonococci in the pus-cells there. The other cavity represented by the line marked B is a gland of Littre. The communication between the gland of Littre and the urethra is not shown in the picture. It will be noticed that there is the same infiltration into the gland of Littre (that is, surrounding its edges) that there is into the urethra. It is very interesting to notice the great distance between the gland of Littre and the urethra. This tends to demonstrate that the idea that acute urethritis can be cured by irrigation into the anterior urethra is, in this case at least, wrong.

Just a word as to the pathology of stricture. Who made the first observations as to its nature cannot be stated. In 1894, having observed ob-

structions in the urethra disappear through the treatment of an accompanying chronic urethritis without dilatation obstructions, considered at that

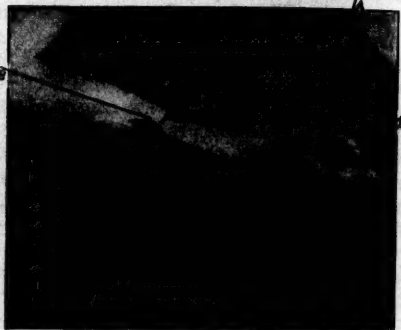


Plate No. 2 represents a transverse section made through the urethra of a man about thirty years old, who died from the effects of stricture; that is, he died from multiple kidney abscesses, cystitis with dilated ureters following retention of urine. In this specimen a cut was also made longitudinally in the urethra, so the opening to the left of the line B represents the urethra opening, and the wavy black line C on the borders of the opening represents true cicatricial formation, that is, the stricture from the effects of which he died; while D, as stated above, represents granular projections into the urethra, or soft strictures.

time to be stricture, the writer consulted his friend the pathologist, Dr. Ira Van Geison, for the purpose of finding out from him, if possible, the nature of urethral obstructions. From him he learned what conditions were present. Van Geison's views have been confirmed by those of other pathologists. We have in the formation of true stricture two antecedent conditions: (1.) An acute exudative inflammation with infiltration; (2.) the formation of a granuloma, at the base of which, in time, connective tissue forms, making true stricture.

As the acute urethritis subsides it leaves the urethra full of small excoriations, the surface of which, becoming granular, gives rise to bunches which can be recognized in the urethra. These have often been incised in the past under the name of soft stricture. They are admirably shown in Plate<sup>1</sup> No. 2. Letter D.

It was their disappearance without dilatation which first caused the writer to look up the pathology of stricture. Nature herself, or any treatment internal or local which assists her efforts by stimulating circulation, tends to cause them to disappear. If they continue long enough, as stated above, cicatricial tissue forms in their base and true stricture results. This formation of cicatricial tissue to any perceptible extent is ordinarily a slow one, taking perhaps years for its accomplishment. Improper or careless instru-

<sup>1</sup> The writer desires to express his thanks to his friend, Dr. Harlow Brooks, for plates appearing in this article. Plates from similar specimens have rarely been shown. They were obtained by him during the course of his necropsical work at Bellevue Hospital.



mentation through traumatism will accelerate its appearance.

Granular infiltration of the urethral wall is shown all through the field, the black patch toward the bottom of the figure represents a necrotic lymph-node.

*Treatment.*—The acute urethritis generally, if treated without local applications will be less inclined to leave chronic inflammatory areas behind it, than if treated locally too early and too vigorously. As the acute exudate inflammation subsides, treat any patches left behind, which nature has failed to cure, by the appropriate local treatment for chronic urethritis. Such measures will tend to prevent the formation of cicatricial tissue, and should be persisted in for a long time. Irrigations, instillations, with occasional dilations, may be called for. When called upon to treat a true stricture, any chronic urethritis having been remedied by appropriate measures, the stricture itself should ordinarily be treated carefully and for a long time by dilatation. Preferably by the use of rubber instruments up to the high numbers, as by their use the urethra is less liable to be wounded. For the more extensive dilatations, use steel sounds carefully, remembering that their use is apt to be irritating to the prostate and that a chronic prostatitis not infrequently accompanies stricture. Those urethrae occasionally met with which stand dilatation badly, if carried beyond a certain point and which pass under the name of irritable urethrae, either have an accompanying chronic urethritis, or the individuals possessing them are suffering from some systemic depression, like neurasthenia or lithemia, which should be remedied by appropriate systemic treatment.

Remembering that stricture is the formation of cicatricial tissue, its incision will lead to the formation of more cicatricial tissue later on unless the canal is kept open. It is almost never necessary to cut a stricture that has not been previously incised or had its connective tissue increased by improper instrumentation. Individuals are occasionally met with, more often in hospital practice, the whole bulb-membranous juncture of whose urethra has become a mass of cicatricial tissue, and such a condition exists that incision is almost imperative. Generally in such cases a history is given of previous urethrotomies having been performed. Even in such cases it is often possible to get along without further cutting. When after due deliberation incision seems called for, it should be carried to such an extent by external, and often internal urethrotomy as well, that a No. 30 French sound can be passed with ease. It would seem unwise, even in those old stricture cases just described, to incise them with the idea that owing to the careless habits of the patient their urethra will be liable to remain open for a longer time, than if it was entrusted to them to see that gradual dilatation was persisted in. For in urethrotomies the patient is submitted to two dangers: (1) The danger of death from hemorrhage or septicemia, which is

comparatively slight but is probably more frequent than statistics record; and (2) the danger of patients being rendered impotent from injury to the floor of the prostatic urethra or through deformity caused by excessive incision in the pendulous urethra.

*Remarks on the Technic of Operative Procedures.*—A catgut filiform can occasionally be passed in the case of retention of urine, when it is impossible to pass the ordinary whalebone filiform. One of these can be tied in for a few hours and later on an ordinary filiform can be passed and the stricture dilated by the passage of tunnel sounds of increasing sizes over the filiform in the usual manner, generally taking pains to hug pretty closely the roof of the urethra with the sound; or the author's modification of the Banks filiform, an extremely useful instrument made by Tilmann, can be used. Occasionally the length of the urethra will necessitate the use of a filiform of double length. These very long filiforms are apt to form a hook over the end of the tunnel sound in the bladder and render difficult the removal of the filiform and sound as well. The incision of the urethra in external urethrotomy should be made as far away from the bulb as is convenient, in order to avoid the excessive hemorrhage which sometimes takes place there, proper care being taken not at any time to wound the rectum. Of course in external urethrotomies all bleeding tissue that can be got at should have pressure applied, and the remaining hemorrhage be controlled by leaving forceps on for some hours if desirable (as suggested by my friend Dr. Henry Morton in his excellent book just published), and by thorough packing. Whether there is much hemorrhage or not, plenty of packing should be put around the perineal tube, care being used not to get it on one side of it merely. Pains taken to secure a good perineal tube with a rounded end, instead of any flat-ended piece of tubing, is time not wasted. The packing should be removed in at least 48 hours, when the tube also can generally be taken out. The prolonged retention of the tube is probably of little benefit, and the packing is dangerous unless changed. The Rand modification of the probe-pointed bistoury, and the Rand modification of the Otis urethrotome instruments are to be recommended.

*Conclusions.*—(1.) Careful treatment of chronic urethritis will prevent the formation of stricture.

(2.) True stricture is of slow growth and can generally be best treated by a prolonged passage of sounds and the proper treatment of any complication co-existent with it.

(3.) Cutting operations are almost never required in strictures which have not been previously incised. Strictures once incised, unless kept open, are liable to require further incision.

(4.) An incision being necessary, it is better to do an external urethrotomy combined with an internal urethrotomy if required.



# COMPARATIVE TOXICITY OF AMMONIUM COMPOUNDS, A STUDY IN AUTO-INTOXICATION.\*

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In the beginning we wish to call attention to certain rather well-recognized physiological facts which have an important bearing on the questions here considered.

The alkalinity of the blood is due to definite quantities of sodium, potassium, calcium and magnesium, which are so combined in the corpuscles and plasma as to render marked variations in the alkalinity of the blood, either in health or disease, a very unusual occurrence.

The protective mechanism which guards the blood against alkaline loss is so effective that the alkalinity of the blood remains almost constant under nearly all pathological conditions, even those which are characterized by acid intoxications. In certain severe acid intoxications, however, such as may occur in the last stages of diabetes mellitus, it appears that the alkalis of the blood may be drawn upon to assist in the neutralization and elimination of the enormous quantities of organic acids which are present in the body in this condition.

But from our present knowledge of this subject one seems justified in concluding that the alkalis of the blood are not drawn upon to any considerable extent to neutralize acids in acid intoxications except when so large an amount of the acid is present that it cannot be neutralized by the large quantities of ammonia ever present in the tissues and constituting in this respect a protective mechanism for the preservation of the alkaline bases in the blood.

The ammonia which serves this important purpose of protecting the alkaline salts of the blood from acids has its origin, for the most part, in the cellular metabolism and retrograde metamorphosis of albumins which are constantly going on. Under ordinary circumstances the amount of ammonia derived from this source seems amply sufficient to neutralize all the acids which appear in the body. There is, however, another source of ammonia in the chemical changes taking place in the formation and absorption of peptones from the intestinal canal. This is shown by the fact that the portal blood contains a large amount of ammonia during the absorption of peptones. And it seems probable that this ammonia, which normally finds its way to the liver and is converted into urea, may in the presence of severe acid intoxications be thrown into the general circulation and assist the ammonia of the tissues in neutralizing acids and in thus protecting the alkaline bases in the blood.

The ammonia formed in the tissues is under normal conditions combined with  $\text{CO}_2$  to form carbonate of ammonium, and this is converted by the liver, and possibly by other organs, into urea. For this reason only a very small amount of this ammonia, under normal conditions, finds its way

to the kidney. It has been estimated that about one gram of ammonia is excreted in normal urine every 24 hours. The ammonium compounds, therefore, are found in very minute quantities in normal blood.

We do not understand the manner in which all of this ammonia is collected from the tissues and converted into urea, but we do know that under pathological conditions which result in the presence of acids in the body, the ammonia is seized upon by these acids and carried to the kidneys to be excreted. In acid intoxications, therefore, the acid passes through the blood and tissues very largely in combination with ammonium.

The amount of ammonia which may be excreted in combination with pathological acids is sometimes very great, as much as eight or ten grams may be the enormous daily output in such severe acid intoxications as are found in diabetic coma.

For the above reasons it is our belief that symptoms of systemic intoxication which result from the presence of acids in the body are for the most part due to the poisonous action of ammonium compounds of these acids, rather than to any marked decrease in the alkalinity of the blood, which, under rare conditions, these acids may cause.

Another physiological fact bearing on this research which should here be noted is, that while the alkalis of the blood are not seriously drawn upon for the neutralization of acids until the available supply of ammonia is exhausted, the salts of sodium and potassium, when introduced into the body as medicines, or when from any cause they occur in solution in the body media in excess of the quantities required by the blood, are seized upon in preference to ammonia by the acids. In acid intoxications, therefore, we may diminish the amount of ammonia excreted in combination with acids by administering the salts of sodium or potassium. The sodium and potassium under these conditions, when introduced from without, or when from any cause they occur in excess in the body-media, serve to protect the ammonia from the acids and to allow it to be converted as it normally is into urea, and thus diminish the amount of ammonium compounds in the blood and other body-media.†

The advantages that may be derived from replacing the ammonium which is being excreted in combination with acids with a base such as sodium will appear later in the discussion of this subject.

**Ammonium.**—In studying the relative toxicity of such ammonium compounds as may possibly occur in the body during health and disease we have thought it advisable in the same connection to study the relative toxicity of such salts of the other alkalis as may possibly be found in the body under normal and pathological conditions,

† C. A. Herter, Transactions of the Association of American Physicians, Vols. xv, xvi, and E. P. Joelin, Transactions of the Association of American Physicians, Vol. xvi, discuss very fully and comprehensively the physiology and pathology of acid intoxications.

\* Read before the Association of American Physicians.



and which may possibly play a rôle in producing the symptoms of auto-intoxications.

The five bases which under varying circumstances may be utilized to neutralize acids in the body are ammonium, sodium, potassium, magnesium and calcium. The comparative toxicity of the salts which these five bases form when combined with such acids as may possibly be found in the body under normal and pathological conditions will now be studied.

The animals used in these experiments were ordinary house-mice. The relative toxicity of the various salts was determined by injecting from a carefully graduated syringe a sufficient quantity of 5 per cent. solutions to produce death, and the lethal dose of each salt for a mouse of average size was in this way carefully established.

In this research we have sought to establish not the actual but the relative toxicity of these salts, and have for this reason classified as relatively "non-toxic" all salts which did not in minimum doses produce toxic symptoms. Such salts we believe are so feebly toxic that they can play no rôle in producing the systemic symptoms of auto-intoxications, and for the purposes of this research they may therefore be considered as "non-toxic."

symptom noted is an increase in reflex excitability, and this is followed by tonic and clonic spasms. But when the toxic dose is not quite sufficient to produce death, then as the convulsive movements subside the respiratory rhythm is markedly disturbed, the breathing is rapid, labored, irregular and gasping. These symptoms continue for a time, to be followed by a second convulsion, or they may gradually pass off, the mouse entirely recovering. When, on the other hand, ammonium is combined with a poisonous acid, such as oxalic, the resulting salt, which owes its toxicity largely to the acid ion, will produce a symptom-group differing somewhat from the above description, but which still closely resembles the symptom-group of ammonium-poisoning.

As has been previously said, body-acids are, as a rule, excreted as ammonium compounds, and, therefore, in all severe acid intoxications ammonium in combination with acid ions is diverted in large quantities from its normal course and made to pass through the lymph and blood channels of the body until it is finally excreted by the kidneys or other excretory organs. By this process the whole nervous system must be directly exposed to the action of these compounds.

AMMONIUM TABLE.

Salt.	Toxicity of 5% sol.		Amount in fatal dose.		Formula.	Relation of wt. of loss to weight of molecule.		Amount of NH <sub>4</sub> in fatal dose.	
	m.	c. c.	grs.	grms.		Ratio.	Per cent.	grs.	grms.
Ammonium Oxalate.....	2-3	.04	.033	.002	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> O <sub>4</sub> ....	18:62	29.0	.0006	.00088
Carbonate.....	2	.12	.10	.006	(NH <sub>4</sub> ) <sub>2</sub> CO <sub>3</sub> ....	18:48	37.5	.0375	.0023
Chromate.....	2	.12	.10	.006	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> O <sub>4</sub> ....	18:76	23.7	.0237	.00148
Chloride.....	3	.19	.15	.009	(NH <sub>4</sub> ) <sub>2</sub> Cl.....	18:33	34.0	.051	.00308
Nitrate.....	3	.19	.15	.009	(NH <sub>4</sub> )NO <sub>3</sub> ....	18:80	22.5	.0337	.00208
Citrate.....	3	.19	.15	.009	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> O <sub>7</sub>	18:72	25.0	.0375	.00235
Sulphate.....	3-5	.22	.175	.011	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ....	18:66	27.3	.0477	.003
Tartrate.....	4-5	.28	.225	.013	(NH <sub>4</sub> ) <sub>2</sub> C <sub>4</sub> H <sub>6</sub> O <sub>6</sub>	18:52	19.6	.0441	.0028
Hydrogen Phosphate.....	4-5	.28	.225	.013	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub> ....	18:66	27.3	.0477	.003
Acetate.....	8	.49	.400	.026	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> H <sub>3</sub> O <sub>2</sub>	18:77	23.4	.0330	.00208
Sarcosylactate.....	10	.62	.50	.032	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> H <sub>3</sub> O <sub>2</sub>	18:107	16.80	.04	.00264
Lactate.....	12	.74	.60	.039	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> H <sub>3</sub> O <sub>2</sub>	18:107	16.80	.1008	.00635

A study of the table clearly demonstrates the toxicity of ammonium when in combination with most of the ordinary acids which may occur in the body. The importance, however, of the ammonium ions in contributing to the toxicity of certain of the ammonium salts in the above table can better be arrived at by comparing the toxicity of the ammonium salts of certain acid ions with the sodium salts of the same acid ions. For example, it will be seen by reference to the table of sodium salts that sodium chloride, sodium nitrate and sodium sulphate are "non-toxic," while the ammonium salts of the same acid ions are quite toxic. Therefore the toxicity of these salts as well as the citrate, tartrate and acid phosphate of ammonium, depends very largely upon the ammonium which they contain.

When ammonium in combination with a comparatively non-toxic acid, such as hydrochloric, is injected subcutaneously into mice the first

From these facts cited the inference seems plain that ammonium may be an important factor in producing systemic symptoms in certain acid intoxications, but how important the ammonium ions may be in these intoxications will depend upon the toxicity of the acid ions with which they are combined. In some instances, as we shall see later on in this discussion, the acid ions are much the more important of the two toxic agents, and in others they apparently exert an antitoxic effect on the toxic action of the basic ion.

In this connection it may be well to note that the non-toxicity of the ammonium compounds when given by the mouth may be explained by the fact that ammonium compounds when given in this way do not as a rule reach the general circulation, but are converted by the liver into urea.

One of the most interesting facts, however, discovered by a study of the table, is that



the ammonium ion when combined with an organic acid largely loses its toxicity. The ammonium salts of acetic, lactic and sarcolactic acids are comparatively non-toxic, these acids, when combined with ammonium, apparently neutralizing or destroying in part its toxic action. It was at first thought that this effect might be more apparent than real, the diminished toxicity being due to the increased molecular weight of these complex molecules and the relatively smaller amount of ammonium which these molecules contained. A reference, however, to the table shows that these facts fall short of explaining the comparative non-toxicity of the ammonium compounds of the organic acids. It may be noted that the toxic dose of ammonium lactate contains .00655 of ammonium, while the toxic dose of ammonium chloride contains only .00306, less than one-half as much. The toxic dose of ammonium lactate is 12 minims of a 5 per cent. solution, and this dose is so large as compared with the toxic doses of the ammonium compounds of the inorganic acids that ammonium lactate may be classified as comparatively non-toxic. When in connection with the comparative non-toxicity of this ammonium salt one remembers that the ratio of ammonium to weight of salt in molecule is 18:107, one can readily understand how very large quantities of lactic acid may be carried in combination with ammonium through the body-media to be excreted by the kidney without producing symptoms of ammonium intoxication. It may, however, be well to note that while ammonium lactate is comparatively non-toxic, yet feeble as is this toxicity it is much more toxic than sodium lactate.

What is here said of lactic acid applies with almost equal force to all the ammonium salts of organic acids with which we have experimented. The sarcolactate and acetate of ammonium have about the same toxicity as the lactate. All of these acids may therefore be excreted in considerable quantities without causing toxic symptoms. These facts may explain the absence of symptoms of ammonium-poisoning in diabetes, mellitus and other organic acid intoxications. We do not assert, however, that the antitoxic action of the acid ions of the organic acids is sufficient wholly to protect the body against the enormous quantities of ammonia (10 grams in 24 hours) which may be excreted in diabetic coma.

**Sodium.**—Sodium is not drawn upon very largely to neutralize acids in the body except when it occurs in available solution in excess of the quantity required by the blood, or when it is introduced from without as a medicine. Under these latter conditions, however, it is seized upon by acids in preference to ammonia. It may therefore, when given medicinally, be utilized to protect the ammonium of the tissues. The sodium thus introduced replaces the ammonium in the neutralization of acids. This we believe may, in some instances, be an important substitution, since in this manner the poisonous ammonium salts are withdrawn from the circulation, and the

non-poisonous sodium salts are substituted therefor.

SODIUM TABLE.

Sodium Compound	10 min. of a 5% sol. produced no result.
Sodium Chloride.....	" " " " " "
" Nitrate.....	" " " " " "
" Sulphate.....	" " " " " "
" Lactate.....	" " " " " "
" Acetate.....	" " " " " "
Uno Sodium Phosphate	" " " " " "
Di " "	" " " " " "
Tri " "	" " " " " "
Sodium Sarcolactate....	" " " " " "

In this table the comparative non-toxicity of sodium compounds for mice is clearly demonstrated, since no symptoms were produced by the injection of 10 minims of a 5 per cent. solution of any of the above compounds. From these facts it seems a fair conclusion that the sodium salts cannot be directly responsible for any of the systemic symptoms which may occur in acid intoxications. When, however, the acid intoxication is so great that the sodium of the blood is largely drawn upon and its alkalinity thereby diminished serious symptoms may follow.

**Potassium.**—Potassium is a base which, when it occurs in available solutions in excess of the quantity required by the blood, or when it is introduced from without as a medicine, may be utilized in preference to ammonia in the neutralization of acids in acid intoxications. Under ordinary conditions a variable amount of potassium is available for this purpose, and potassium may therefore play a not unimportant rôle in the neutralization of acids even before the available ammonia of the tissues has been exhausted. It is not impossible therefore that potassium, which is a poisonous base, may at times contribute to the symptoms produced by acid intoxications.

It should also be noted that in very severe acid intoxications, where the available ammonia has been in great part exhausted, the potassium of the tissues may possibly be drawn upon in preference to the alkalis of the blood to neutralize acids.

POTASSIUM TABLE.

Salt.	Toxicity of 5% sol.		Amt. of salt in fatal dose.		Formula.
	m.	c.c.	grs.	grms.	
Potassium Carbonate....	4.	0.246	0.20	0.012	$K_2CO_3$
" Chloride.....	5.	.308	0.25	0.015	KCl
" Nitrate.....	5.66	.349	0.283	0.0175	$KNO_3$
" Sulphate.....	6.	.369	0.30	0.0185	$K_2SO_4$
" Phosphate.....	6.5	.400	0.325	0.02	$K_2HPO_4$
" Acetate.....	9.	.554	0.45	0.027	$K(C_2H_3O_2)$

It will be noted, in comparing corresponding salts in this table with those in the ammonium table, that the potassium ion has about one-half of the toxicity of the ammonium ion when combined with the same inorganic acids.

The action of potassium in the mouse differs somewhat from that of ammonium, in that it does



not produce violent convulsive action. The symptoms of potassium-poisoning in the mouse are rapid and labored breathing and the termination of this in asphyxia. The toxic action of the potassium ion should be kept in mind, not only because of the possible rôle which it may play as a symptom-producer in acid intoxications, but also because, in therapeutics, by choosing potassium to replace the ammonium ion in severe acid intoxications we may only substitute one toxic base for another. From our knowledge of this subject it would appear that non-toxic sodium is far preferable to potassium for this purpose.

**Magnesium.**—Magnesium plays a comparatively unimportant part in the neutralization of acids in ordinary acid intoxication. When, however, a severe acid intoxication has almost exhausted the available supplies of ammonia the magnesium of the body may be drawn upon for this purpose. Therefore in severe acid intoxications, such as may occur in diabetes mellitus, magnesium may occur in considerable excess in the urine. For these reasons it may be well to keep in mind that magnesium when combined with acid ions is very toxic. This may be noted in the following table.

MAGNESIUM TABLE.

Salt.	Toxicity of 5% sol.		Amt. of salt in fatal dose.		Formula.
	m.	c.c.	grs.	grms.	
Magnesium Chloride ....	2.	0.123	0.10	.006	MgCl <sub>2</sub>
" Sulphate ....	3.5	0.215	0.175	.011	MgSO <sub>4</sub>

The magnesium compounds produce death in mice very suddenly and without convulsions. They probably paralyze the heart. When, however, a little less than the lethal dose is given, the breathing is rapid and irregular for a time, and the mouse, after a period of inactivity, finally recovers. Magnesium, when combined with a sulphate ion, has about the same toxicity as ammonium, but when combined with a chloride ion it is more toxic. But notwithstanding the toxicity of magnesium it probably plays an unimportant rôle in producing toxemia in acid intoxications because of the small amount of this base utilized for neutralizing acids.

The poisonous action of magnesium is unimportant also from a therapeutic standpoint, because when given by the mouth it is absorbed in such small quantities that it cannot be utilized to any extent for replacing the ammonium which is excreted in combination with acids in acid intoxications.

**Calcium.**—Calcium, when combined with acid ions, has a very slight degree of toxicity, as is shown in the following table.

It appears from this table that, excepting sodium, calcium is the least toxic of the five bases, being notably less toxic than potassium. It is not at all probable that calcium plays any direct

CALCIUM AND BARIUM TABLE.

Salt.	Toxicity of 5% sol.		Amt. of salt in fatal dose.		Formula.
	m.	c.c.	grs.	grms.	
Calcium Chloride.....	6.5	0.40	.325	0.02	CaCl <sub>2</sub>
" Acetate.....	10.	0.616	0.50	0.03	Ca(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>2</sub>
" Lactate.....	.....	.....	.....	.....	Ca(C <sub>3</sub> H <sub>5</sub> O <sub>3</sub> ) <sub>2</sub>
Barium Chloride.....	1.5	0.09	.075	.004	BaCl <sub>2</sub>

rôle in producing symptoms in ordinary acid intoxications, because it is not only very slightly toxic, but is excreted in comparatively small quantities in these conditions. It is believed, however, that calcium plays a rôle as a carrier of the oxalate ion through the blood, the calcium oxalate being kept in solution by the acid sodium phosphate. If this be true, calcium may, in this instance, be the carrier of a poisonous ion through the body-media, but our knowledge of this subject is too vague to justify further inference.

It is possible that the calcium of the blood may be drawn upon like sodium and potassium in very severe acid intoxications, and in this way serious symptoms may be produced, but the symptoms caused by sodium, potassium, and calcium starvation (if such conditions exist) cannot be classified as intoxications directly produced by these bases.

Turning from the rôle which the basic ions may play as symptom-producers in acid intoxications, let us now consider the possible rôle which acid ions may play in these intoxications. In such a study it is necessary that these acid ions be combined with some non-toxic base, such as sodium, so that the toxicity of the resulting salt may represent the toxicity of the acid ion alone.

**Inorganic Acids.**—Sulphuric, nitric, phosphoric and hydrochloric acids are comparatively non-toxic, as is shown by the fact that the salts produced by their union with a "non-toxic" base, such as sodium, are "non-toxic." From this it would appear that these acids play no unimportant part as direct symptom-producers in ordinary acid intoxications. But, on the other hand, while sodium chloride, sulphate, phosphate and nitrate are "non-toxic," ammonium chloride, sulphate, phosphate and nitrate are quite toxic. But the toxicity of these salts is largely due to the ammonium they contain. It follows, therefore, that the only apparent rôle which these inorganic acids play as symptom-producers in ordinary acid intoxications is as carriers of ammonium, which is brought into the general circulation by their presence in the body.

In cases of acute poisoning by these inorganic acids, where large quantities are introduced from without, the alkalis of the blood may be attacked and serious symptoms in this way be produced. This condition, however, if it ever occurs, is an indirect effect of these acids and not due to their poisonous action.

**Organic Acids.**—In certain pathological con-



ditions organic acids are present in very large quantities in the body, and these acids, for the most part, are neutralized by and eliminated in combination with ammonium. Yet these severe acid intoxications, in which ammonium in large quantities, in combination with certain organic acids, passes through the blood and other body-media on its way to excretion, may not be characterized by symptoms of ammonium intoxication. Diabetes mellitus is a notable example of this kind. In the advanced stages of this disease we may have as much as 18 or 20 grams of  $\beta$ -oxybutyric acid excreted in combination with 5 grams of ammonium without producing symptoms of ammonium-poisoning. And even in the coma-stage of this disease, when as much as 8 or 10 grams of ammonium in combination with organic acids are excreted in 24 hours, it has not been proven that ammonia plays any rôle in producing the coma, dyspnea and other nervous symptoms present, notwithstanding the fact that this explanation might be suggested by the disappearance of the coma and other nervous symptoms when by medication the ammonium, in combination with organic acids, is replaced by a "non-toxic" base, such as sodium.

But whatever may be the explanation of the nervous symptoms in the last stage of diabetes, when ammonium in very large quantities, in combination with  $\beta$ -oxybutyric acid, is circulating through the blood on its way to excretion, the fact remains that prior to the coma-stage as much as 5 grams of ammonium, in combination with organic acids, may in 24 hours be carried through the blood without producing symptoms of ammonium-poisoning. The explanation of this has already been given in the ammonium table, where it is shown that certain organic acids when combined with ammonium neutralize in part its poisonous action. This property of certain organic acids may be noted by a study of the toxicity of the lactates in the previous tables. Lactic acid is an organic acid normally found in the body, and which, when it occurs in excess, is supposed to be capable of producing systemic intoxications. But lactic acid, like uric acid, has attained this reputation outside of the laboratory. When lactic acid is combined with a non-toxic base, such as sodium, the resulting salt is "non-toxic."

Fifteen minims of a 5 per cent. solution of sodium lactate will not produce toxic symptoms in the mouse. From this it is clear that the lactic acid itself is "non-toxic," and can play no direct rôle in producing symptoms of systemic intoxication. This same acid, as has been already noted, also has the power of partly destroying the toxic action of ammonium when combined with it to form a salt. This is evident from the fact that it requires 12 minims of a 5 per cent. solution of ammonium lactate to kill a mouse. These facts may explain why even large quantities of lactic acid may be eliminated in combination with ammonium without producing symptoms of ammonium intoxication.

A reference to the ammonium table will show

that relatively large quantities of acetic and sarcolactate acid may also be excreted in combination with ammonium without producing symptoms of ammonium intoxication. From this the inference is drawn that ammonium is better adapted for the neutralization of certain organic acids than for certain inorganic acids.

It may also be suggested, in explanation of the fact that large quantities of ammonium may be excreted in combination with certain organic acids without producing ammonium-poisoning, that the body has acquired a degree of immunity against the poisonous action of these ammonium salts.

*Oxalic Acid.*—Oxalic acid, when combined with ammonium, makes a very poisonous salt, for .04 c.c. of a 5 per cent. solution of ammonium oxalate will kill a mouse, and this lethal dose contains only .00058 grams of ammonium. Ammonium oxalate is therefore about four times as poisonous as the ordinary ammonium salts, such as the chloride.

From these facts it is clear that it is the oxalate rather than the ammonium ion that gives toxicity to this salt, and that oxalic-acid poisoning is largely due to the oxalic acid itself, and not to the base with which it is combined. When, however, this base happens to be ammonium the intoxication is more severe. The ammonium ion, while not the most important, is a contributing factor to experimental oxalate of ammonium-poisoning.

It appears, therefore, that oxalic acid may be a potent factor in producing systemic intoxication if at any time it be present in considerable excess in the body-media. It seems, therefore, rather illogical in the light of the uncertain chemical knowledge which we have of all the conditions underlying the formation of oxalic acid in the body, and of the form in which it traverses the body-media, to assert that oxalic acid, an excess of which in the urine is not uncommonly associated with constitutional symptoms, has no causative relation whatever to these symptoms. The relationship which oxalic acid bears to these symptoms has perhaps not as yet been definitely determined, although it is an established fact that an excess of oxalic acid in the urine is not always associated with systemic intoxication.

*Carbonic Acid ( $\text{CO}_2$ ).*— $\text{CO}_2$  is an acid iron constantly found in the body. The ammonia of the tissues unites with it to form carbonate of ammonium, and this salt in turn is converted into urea. A failure of the urea-forming function of the liver may therefore throw into the general circulation a considerable quantity of carbonate of ammonium, which is passed through the blood to be excreted by the kidney.

Since carbonate of ammonium possesses a considerable degree of toxicity (see ammonium table), it may be possible that it contributes to the systemic intoxications which occur as a result of the functional inactivity of the liver.



## ADDENDUM BY B. K. RACHFORD, M.D.

*Uric Acid Leucomains.*—In a number of papers read before this Association, the first of which was presented in 1895, I held to the opinion that leucomains of the uric-acid group, especially paraxanthin, were important etiological factors in producing migraine and a number of allied diseases. In these papers I gave in detail the experimental and clinical evidence upon which I based this opinion.

In 1899 Dr. Pfaff read a paper before this Association entitled "An Experimental Research, Indicating that Paraxanthin Poisoning is not the Cause of Epilepsy or Migraine." From this research Dr. Pfaff concluded that the urines, from the cases of migraine and epilepsy which he examined, did not contain sufficient paraxanthin to produce poisonous symptoms, and he lays special stress upon the fact that when ammonia was eliminated from his "final fluids" they lost their toxicity. He also suggested from an examination of one of my "final fluids," which contained 17 per cent. of ammonia, that the toxicity of all of my "final fluids" in my published experiments were due solely to this cause.

On this last opinion, concerning the toxicity of my "final fluids," I wish to take issue with Dr. Pfaff, for the following reasons: First, the specimen of "final-fluid" which he examined was not a representative one. At the 1898 meeting of this Association, after discussing this subject with Dr. Pfaff, I agreed to send him one of my "final fluids." On my return home I obtained from my laboratory the residue of one of these "final fluids," which had been standing for some weeks. This I sent to Dr. Pfaff with the explanation that it was one-fifth of a "final fluid" which I had prepared from two liters of migrainous urine. One half of this fluid (one-tenth of my original "final fluid") was used by Dr. Pfaff; the other half, at my request, was returned to me, and then I learned that the fluid sent to him contained little else than the sediment which was produced when ammonia was added in the final step of making these fluids. This explains the very large quantity of ammonia (17 per cent.) which this fluid contained. And the fact that Dr. Pfaff examined a specimen which represented only one-tenth of one of my "final fluids" (a quantity representing only six or seven ounces of urine) may explain his failure to find paraxanthin in the specimen. However this may be, it is certain, as I afterwards wrote Dr. Pfaff, and as I said before this Association in 1899, the "final fluid" in question was not a representative one, as it contained many times more ammonia than the fluids with which I experimented. Secondly, by the method used I uniformly obtained from migrainous urines poisonous "final fluids," and from non-migrainous urines non-poisonous "final fluids." If the faulty technic which I used had left in my "final fluids" sufficient ammonia to account for their toxicity, then all of these fluids would have been toxic, and not alone those derived from migrainous urines.

The "final fluids" from the very large number of migrainous urines which I have examined must therefore have contained toxic ingredients other than ammonia, and these I believe to have been the xanthin bodies. Thirdly, my "final fluids" retained their toxicity when they contained so small an amount of ammonia that that agent alone could not have accounted for their toxicity. This fact I presented in the discussion on Dr. Pfaff's paper before this Association, May 4, 1899, and I then detailed some experiments which led me to believe that the ammonium compounds of the xanthin bodies were important agents in producing the auto-intoxications, which are etologically related to migraine, and other lithemic manifestations.

These observations suggested to me the foregoing research on the comparative toxicity of such ammonium compounds as may possibly play a rôle in producing symptoms of systemic intoxication, and also encouraged me to further investigate the toxicity of the ammonium compounds of the xanthin bodies.

In these experiments, which I have carried on at intervals during the past two years, I have worked not only with pathological urines, but also with large quantities (30 to 70 gallons) of normal urine, which I obtained from patients in the Cincinnati Hospital.\* From these specimens of normal urine I prepared "final fluids" containing the xanthin bodies†. After testing the toxicity of these "final fluids," the amounts of ammonia they contained were carefully estimated‡, and then every trace of ammonia was eliminated from these "final fluids," and their toxicity again tested.

From these experiments I have reached the same conclusions which I expressed before this Association three years ago; namely, that the xanthin bodies were the important toxic principles in my "final fluids," but that their toxicity was increased by small quantities of ammonia in combination with them. The quantities of ammonia, however, required to markedly increase the toxicity of these "final fluids" was much too small to give toxicity to any of the inorganic acid ions studied in this paper.

In this series of experiments the amounts of ammonia in a toxic dose of my "final fluids" varied from .0008 to .0003 grams.

From these experiments I am prepared to state that the toxicity of my "final fluids" was not due solely to the ammonia they contained, but also to other toxic agents found in migrainous, though not in normal, urines, without which the ammonia would have been innocuous.

For these reasons I adhere to the belief that the ammonium compounds of the xanthin bodies gave toxicity to my "final fluids," and that these same compounds are toxic agents in producing migraine and other lithemic disorders which I

\* In this work I have been assisted by the following resident physicians: Dr. Shaler Berry, Dr. W. H. Stutz, Dr. H. L. Woodward, and Dr. D. M. Bagher.

† For method see "Transactions of Association of American Physicians," Vol. 10.

‡ Some of these ammonia estimations were made by Dr. W. H. Crane.



have described in my previous papers as being due to the xanthin bodies alone.

This opinion seems altogether tenable when one remembers that a functionally incompetent liver, which is an important etiological factor, not only of migraine, but of all lithemic conditions, may, by the failure of its urea-forming function, throw into the general circulation sufficient ammonia to combine with the uric-acid leucomains which are also thrown into the circulation by the failure of this selfsame function, in this way diminishing the excretion of the urea and increasing the excretion of ammonia and the xanthin bodies.

#### ACUTE AND CHRONIC TUBERCULOUS PHTHISIS, WITH CASES.\*

BY J. CARDEEN COOPER, M.D.,  
OF PHILADELPHIA.

THE doctrine of the communicability of phthisis is as old as the history of medicine. Even the educated laity among the early Grecians, as taught by Plato and Pliny, believed in the communicability of phthisis and used preventive measures. Physicians in every age have held that the disease is communicable when patients are in close proximity, as in the same living-apartments or occupying the same bed, or to those attending upon or nursing the sick. Yet long-continued proximity to the causes of phthisis usually involves causative agencies other than contagion. The elements of contagion were for a long time thought to be contained in and conveyed by the expired breath; in fact, many theories were held in the absence of any exact knowledge. Villemin in 1865 demonstrated the fact that this disease could be communicated to rabbits and guinea-pigs by inserting beneath the skin portions of the tuberculous product, and further observed that some animals were much more susceptible to inoculation than others. Flint, writing in 1881 upon the communicability of phthisis, refers to a collection of 670 recorded cases of the disease, with the very remarkable statement that the number of instances in which there was indication of the disease having been communicated, either from the husband to the wife or the wife to the husband, amounted only to five. Since the discovery of the specific organism of phthisis, known as the tubercle bacillus, by Klebs, Aufrecht and Koch, the nature and manner of life of this organism have been more or less understood. That it passes through stages of development and growth for a number of series or generations of germ life; that it is capable of being conveyed from one animal to another, and that it is almost uniformly found in the secretions or tissues of those suffering from the symptoms of phthisis—these facts have been established, and from this standpoint the disease has been most thoroughly studied. Physicians are now quite generally agreed that the disease

is both hereditary and inoculable; that the tubercle bacillus reaches the human subject first through the channels of hereditary transmission, principally by the blood and placental tissue of the mother, as taught by Osler; secondly, by transmission through inoculation, which is not a very fruitful source of tuberculosis, and thirdly, through infection by inhalation, as in breathing dust laden with tubercle bacilli, and infection by milk or meat obtained from animals suffering with tuberculosis.

*Acute Phthisis.*—The first division of our subject, acute phthisis or galloping consumption, is by no means a rare disease. It occurs in both children and adults; more commonly between the ages of twenty and thirty years. In the adult it is frequently mistaken for acute lobar pneumonia, and in children for bronchopneumonia. In children the disease sometimes follows whooping-cough or measles. In the adult the causes are more closely related to hereditary tendencies, together with "run-down" system, acute cold, which is probably contracted because of the presence of the tubercle bacillus in the system, prolonged exposure and nervous fatigue.

*Symptoms.*—The disease usually begins with a chill or series of chills, followed by high fever and rapid pulse, restlessness and short breathing. Usually some considerable portion of the lung tissue is airless, almost always with impaired resonance of the apices. The breathing-sound is harsh, and if consolidation is present over any considerable area of lung tissue the presence of tubular and bronchial breathing is shown. The symptoms are almost identical with those of pneumonia, except that the temperature continues with less variation and the usual crisis of pneumonia is not reached. Upon the establishment of expectoration the sputum is copious, and is found to contain tubercle bacilli and elastic tissue. The patient rapidly loses strength and weight. Hemorrhage may occur at any time during the course of the disease. In a few weeks the apices soften rapidly, some of the bronchioles become stopped with sputa, the lung tissue breaks down, and the case terminates fatally in from six to ten weeks. On the other hand, a long crisis extending over many months may occur; the fever lessens, the general symptoms moderate, and the patient drags on to become a chronic case. I desire to present three cases.

*Case I.*—M. B., female, aged twenty-one years; height, five feet three inches; weight, 124 pounds; unmarried. Father, mother and two brothers living, in good health. Maternal grandmother died of phthisis. Patient said she had always been well. After attending a ball, stood upon the porch in a cold wind for an hour. Complained of feeling badly the following day; in the evening had a severe chill followed by rapid pulse and high fever, difficulty and slight pain in breathing. Upon examination the case presented the typical symptoms of acute pneumonia of the right side. Expectoration was established the latter part of the second week, and was found to contain tu-

\* Read before the North Branch of the Philadelphia County Medical Society, May 15, 1902.



bercle bacilli. During the third and fourth week rapid loss of weight began to be noticeable, and it continued, together with occasional night-sweat, abundant expectoration and complete loss of appetite, throughout the course of the disease. During the seventh week the patient had a paroxysm of coughing which produced a hemorrhage of considerable extent. The disease progressed with marked softening of the lung tissue, more especially upon the right side, and at the end of the tenth week the patient died.

*Case II.*—J. S., male; fairly well-developed and well-nourished baby of twenty months. Father, mother and one brother living. One sister had died at the age of two and one-half years of what was pronounced spinal meningitis. Two weeks after recovering from a severe attack of whooping-cough, and after all coughing had ceased, the child was allowed to sit for some hours upon a bench in the park. During the night he became restless and feverish. In the morning he presented the usual symptoms of pneumonia—high temperature, rapid pulse and breathing, entire right lung airless, with harsh râles distributed over upper portion and over left lung. The little patient lived four and one-half weeks, with continued fever and marked loss of flesh and all the symptoms of acute bronchophtthisis. No microscopical or postmortem examination was made.

*Case III.*—E. M., female, aged twenty-six years; height, five feet four inches; weight, 120 pounds; married; family history good. Said she had always been well, with the exception of rheumatism four years previous. After having attended an afternoon and evening lawn-party, at which she stood continuously, she was attacked during the night with severe pain in region of left pleural wall, low down, accompanied by chill, and followed by high fever. I found the patient nervous, with rapid pulse, short breathing, and lower portion of left lung consolidated. Marked impairment of resonance of the apices and deep râles at base of left lung. During the third week of the disease the sputum was examined and found to contain tubercle bacilli and elastic fiber. The patient continued to be very ill, with loss of weight, for four weeks. Then the symptoms slowly modified. Afternoon temperature continued to be present during the next two months, with copious expectoration and considerable loss of flesh. At the end of the fourth month sputum was again examined with the same results. The case presented every evidence of running into chronic phthsis. Was directed to make a change of climate. After a residence of 14 months in the mountains she returned home in good health, no cough, no expectoration.

*Chronic Pulmonary Phthsis, or Chronic Ulcerative Tuberculosis.*—This introduces the second division of our subject. In typical cases pulmonary phthsis of the chronic type is so mildly and imperceptibly developed as often in the very early stages to be unnoticed by the patient.

Yet not a few cases begin with pronounced symptoms and even with hemorrhage.

The causes of this disease may include: A diathesis on the part of the patient; hereditary sensitiveness in this direction; the presence in the system of the tubercle bacillus in some of its forms of development; confining occupation in poorly ventilated rooms. Clerks and artisans of all kinds, especially those engaged in occupations in which a fine dust is emitted, as watch-makers, stone-cutters, artists or sculptors. The malady is especially a house-disease, and Frautley believes that those who drink very little water are particularly subject to phthsis. The theory held at one time by many eminent physicians that every human body contained the germs of all diseases in submission, and that debilitating circumstances of life, such as poor food, overwork, bad air, and improper hygiene in every respect would develop the germs and the diseases along the lines of least resistance—this theory may at least have a relative truth in phthsis. But conversely, it was long and largely believed that pneumonia, bronchitis and diabetes produced and acted as causes of phthsis. It is more probable that cases of recurring pneumonia and bronchitis are from the beginning phthsis caused by the tubercle bacilli.

What are the symptoms most commonly noted? The first local symptom is usually a slight, dry cough. As this cough increases slight expectoration is noticed. The quantity and character of the matter expectorated in the early stages depend on the degree and the extent of the bronchial inflammation. In mild and non-progressive cases the disease, or at least the inflammatory nature of it, is principally confined to the bronchial area. In the progressive character of the disease, and in cases in which cavities have formed, the expectorated matter is purulent and pus-like. The sputa may contain tubercle bacilli and elastic fiber at any or all of the various stages of the disease.

A very simple method of discovering the elastic tissue may be mentioned. Collect all the sputum over a period of 24 hours; add an equal part of solution of caustic soda (208 to ounce of distilled water); and boil the mixture thoroughly; then add cold water slowly. The elastic tissue will precipitate, and can be seen with the naked eye, or with microscope if preferred. For discovering the tubercle bacilli the Ehrlich-Weigert method is best, or Flexner's modification, or that described by Osler as follows: "To saturated solution of fuchsin in absolute alcohol is added solution of commercial anilin oil. A small portion of sputum is spread thin on the glass top cover, and slowly dried. The staining-fluid is then dropped upon the top cover and held over the flame until it boils. The staining-fluid is then washed off in distilled water, rewashed if necessary, and decolorized with 30 per cent. nitric acid, fluid again washed and mounted on the slide. The tubercle bacillus will appear as a short, fine rod, slightly bent."

Hemoptysis occurs in a large proportion of pul-



monary phthisis and may occur at any stage. Fever is an almost constant symptom of phthisis, and the thermometer is usually the best guide to the progress of the disease. To get a correct idea of temperature range, as Osler and Renger have pointed out, it is necessary to make observations from four to six or eight times during the 24 hours. In the early stages of the disease the temperature is intermittent, and amounts to fever in the afternoon and evening, becoming normal in the early morning. In the middle and later stages of the disease the temperature is remittent, a condition in which it is constantly above normal, but drops two or three degrees in the morning hours. Many early symptoms resemble those of malaria, and in malarial districts phthisis is often mistaken for malaria. Sweating is a common symptom. Loss of flesh is usually gradual but persistent, the round, full cheek and supple limbs of health giving way to sunken pallor and skeleton-like extremities. The long, narrow chest, flat in front with projecting scapulæ, the oval finger-nail and progressively enlarged finger-ends, are frequently seen in phthisis.

In the early stages expansion is impaired upon one or both sides. Resonance is defective, and the percussion-note high-pitched in the apices. With the progress of the disease the respiratory murmur is harsh, and when consolidation occurs is bronchial in nature. Deep, harsh râles are heard throughout the lung. When consolidation is extensive or cavities formed, tubular breathing, with an amphoric quality, is noticed. As pleurisy in some of its forms is usually associated with advanced phthisis, friction and tearing sounds may almost always be heard along the chest-walls.

Dyspepsia is a very usual and persistent symptom, sometimes with constipation, but more frequently with diarrhea, particularly in the later stages.

In young subjects, especially girls with chloro-anemic diathesis, dyspepsia with flatulence and aversion to food, with palpitation of the heart, weakness, amenorrhea and marked nervous symptoms are present. Pain in the chest is not an infrequent symptom, although many patients experience no pain. I will now present three cases.

*Case I.*—A. L., female, aged twenty-two years; unmarried; occupation, saleswoman; father, two brothers and one sister living. Mother died of pneumonia, and a maternal aunt died of phthisis. General appearance good; color and figure well developed; height, five feet three inches; weight, 124 pounds. Chest flattened over clavicle, and somewhat narrow. Complained of slight yet persistent cough, without expectoration. Heavy aching pain on the left side of thorax; some loss of appetite. Examination revealed slight dulness, high-pitched resonance breath-sounds at apices, faintly discernible râles on left side. No fever at this time. For two months these symptoms remained nearly constant, with the exception of slight loss of weight, occasional fever of one degree elevation, and increased expectoration.

The sputum was then examined and found to contain tubercle bacilli. During the next four months the patient improved, having taken a vacation, and the cough and expectoration abated. After her return to work the conditions remained stationary, with some increase in cough, for a period of six months. At this time a cold was contracted, resulting in pneumonia of the right lung, which ran a prolonged course, ending with a cavity of the right lung. At this time tubercle bacilli were present in the sputum in abundance. The patient lived two years after the pneumonia, with the usual symptoms of progressive phthisis.

*Case II.*—M. C., male, aged twenty-six years; unmarried; occupation, telegraph operator; family history good, excepting one brother, who died of alcoholism at forty years; height, five feet seven inches; weight, 148 pounds. Complained of continually catching cold and of sore throat and impairment of voice in the after part of the day. Slight cough in early morning, with expectoration. I found the patient suffering with laryngitis and bronchitis, and kept him under observation for two months, at the end of which time the cough had increased, with more abundant expectoration, and almost total loss of voice in the afternoon of each day. There was great aversion to food, accompanied by flatulent indigestion. At the end of the third month deep râles could be plainly detected over the lung tissue, with tubular breathing upon the right side, slight fever, and an occasional night-sweat, with loss in weight. At this time the sputum was examined and found to contain tubercle bacilli. At the tenth month complete aphonia existed, and the loss in weight had been considerable. At this time I advised the patient to change his occupation, which he had not been following for two months, and to take up light work on a farm. This he did, and began to improve; the stomach became stronger; a desire for food returned; the night-sweats ceased; digestion improved, and work became less fatiguing. At the end of five months he ceased coughing, and in two years became practically well.

*Case III.*—C. B., male, aged thirty-two years; married; height, five feet six and one-half inches; weight, 150 pounds; father died of phthisis; mother and three brothers living, all healthy; occupation, carpet-weaver. The patient stated that about a year before his first visit he had passed through a long and severe pneumonia. I found the apices much affected. There was a cavity in the lower lobe of the left lung, which he refused to have drained. Slight continued fever; no cough. Three weeks later a paroxysm of coughing caused a quantity of pus to flow from mouth and nose. I was hurriedly summoned. A bistoury was plunged into the abscess between the eighth and ninth ribs. Forty-six ounces of pus was caught in a vessel. A silver drainage-tube was placed in the cavity. The patient rallied, and was kept in bed two months, with forced feeding. During this time fever abated somewhat, and general conditions improved. With the assist-



ance of Dr. T. O. Nock and Dr. F. M. Strouse, the eighth, ninth and tenth ribs were then resected at three-fourths of their length from the sternum end. The tube was kept in the cavity, which was washed daily. The patient was sent to the country, where he remained in fairly good health for two years. He returned to his occupation of weaver, and remained at work more or less steadily for four years. One year was then spent in camp-life in an adjoining State. Six months after his return to Philadelphia he suffered an acute attack of pneumonia on the right side. Two weeks after this attack the first examination of sputum was made, and it was found to contain large amounts of elastic tissue and tubercle bacilli. The pneumonia ran a course of four weeks, with high fever. Again the patient improved slightly, the temperature becoming normal for a short period in the morning, and he lived for 14 months in a condition of the most extreme emaciation that I have ever witnessed.

## MEDICAL PROGRESS.

### NEUROLOGY.

**Adaptation of Nerve-Cells to Functional Hyperactivity.**—Whether or not the appearance of nerve-cells subjected to stimulation by electric currents of increasing strength, at frequent short intervals, justifies the idea of a possible adaptation of the cell to such stimulation, is a problem the solution of which has been sought through animal experimentation by G. DE PASTROVICH and C. CENI (*Arch. Ital. Biol.*, vol. xxxvii, fasc. 11, 1902). Examination of the nerve-elements was made in animals to which electrical stimulation of gradually increasing intensity was administered; and as a control a second series of examinations was made in animals to which the maximum electric current used in the first series was at once applied. Changes noted in the nerve-elements of animals treated after the latter method were: Laceration of nerve-cells; displacement of the nucleus (the latter being sometimes detached from the cell-body, though its form was preserved); constriction of the protoplasmic prolongations at the cell-end, or detachment of the former from the cell. In those animals to which the current was applied with gradually increasing intensity the nerve-elements were practically intact; a few cells, however, showed dissolution of the chromatic substance, especially in the nucleus, the latter being in some instances entirely empty. The changes observed in the first series are considered as mechanical; those in the second as biochemical alterations analogous to those seen in nerve-cells subjected to the action of toxic agents, as in infectious diseases or in poisoning. The deduction drawn is, that the nerve-cells of the rabbit and dog possess the power of adaptation to the functional hyperactivity caused by repeated applications of the electric current.

**Calcium in Epilepsy.**—Having noted in numerous epileptic cases deficient absorption and elimination of calcium, E. AUDENINO and A. BONELLI (*Rif. Med.*, September 5, 1902) administered various preparations of that drug by mouth and hypodermically in 14 epileptic cases. A decrease in the number of seizures followed in nearly all the patients treated, diminution or increase in the frequency of the attacks corresponding to increased or diminished absorption of the calcium. In a few cases which were uninfluenced by the treatment

it was ascertained that the entire amount of calcium administered had been eliminated in the feces.

**Sciatica and Atropine.**—The treatment of sciatica is a difficult matter, because the origin of the disease is so difficult to reach. S. C. FILLI (*Sem. méd.*, No. 36, 1902) has been treating this trouble for some time with large subcutaneous injections of atropine. Although these large doses determine the usual symptoms of intoxication more or less distinctly, they appear to have a decidedly beneficial result upon the pain. This observer takes 0.06 grams of atropine in 100 drops of water, and of this injects three drops at night, about 10 cm. below the buttock of the affected limb. In about 20 minutes all the physiological effects of the alkaloid in question appear; namely, acceleration of the pulse to 120, dilatation of the pupil, more or less vertigo and intense thirst. If these signs disappear in less than 10 hours he supposes the reason to be that the dose was insufficient. Felt therefore increases the dose by one drop until these symptoms of intoxication continue for 24 hours. A second injection must not be given, however, until all the symptoms of the first dose disappear; consequently only one injection a day is required. He has now treated 26 patients in this manner, including himself, with a record of 22 definite cures.

### EYE, EAR, NOSE AND THROAT.

**Ichthyol in the Treatment of Keratitis.**—The great variety of means for treating keratitis is sufficient evidence of the difficulties in the management of this disease. I. I. FERNANDEZ of Pensa (*Sem. méd.*, September 24, 1902) reports that he has succeeded in treating superficial infiltrations of cornea with small ulcers by means of applications consisting of an ointment composed of 0.10 grams of ichthyol and 0.15 grams of cocaine, in 5 grams of excipient. Under the influence of these applications the signs of inflammation rapidly decreased and the pains disappeared. The newly formed blood-vessels, so common in this disease, also fade away. The tissue of the cornea regenerates, and as a rule only a small portion of the opacity remains. The record of his cases now reaches 28, of which 22 were either trachomatous or blennorrhagic.

**A Case of a So-called Glaucoma Fulminans.**—Dr. DOMBROWSKY (*Prac. Vrach.*, No. 28, 1902) considers this case of great interest, in the first place, on account of the rapidity of its development. On the fifth day of the disease the glaucoma in the right eye changed into an acute panophthalmitis, and the eye was lost, while the left eye was also lost a few days later from acute inflammatory glaucoma. The second point of interest is the fact that the etiology of the case seems to be perfectly clear. The patient never had any eye-disease before. One night he drank excessively, came home, found the door of the bedroom locked, and slept part of the night on the floor of a very cold vestibule. He slept on his right side. The next morning he felt a slight indisposition, and in the evening of the same day the disease was fully developed. The etiological moment then seems to be clearly that of exposure to an acute cold, and the author questions whether in some cases the etiology of an acute inflammatory glaucoma is not very near to the etiology of acute articular rheumatism.

**Complications from Cataract Operations.**—Two unusual complications following upon operations for cataract are reported by T. R. POOLEY (*Med. Rec.*, September 13, 1902). The first was a case of diabetes in which the symptoms had been under treatment for some time with apparent benefit and no serious results were to be anticipated. The operation was performed under cocaine without incident, but symptoms of diabetic



coma soon developed and the patient died in six days. The second was an alcoholic man who had previously suffered from delirium tremens, but this part of the history was withheld. Soon after the operation delirium began, and in spite of most active treatment it was impossible to sufficiently restrain him, and a prolapse of the iris with subsequent infection followed. These instances simply impress one with the necessity of thoroughly examining the patient's condition before operation and carefully preparing him for the ordeal although it may be considered a slight one.

### MEDICINE.

**Diagnostic and Prognostic Importance of Hematemesis.**—Many and varied are the conditions which lead to vomiting of blood and W. JANOWSKI (*Zeitsch. klin. Med.*, vol. 46, Nos. 1-4) enumerates them as follows: (1) Primary disease of the stomach, such as ulcer, cancer, erosion, perforation and acute exulceration following the action of caustics; (2) congestion or inflammation of organs supplied by the same vessels as the stomach; (3) constitutional disease, such as Werlhoff's disease, scurvy, plague, sepsis, leucemia, etc.; (4) when the stomach is irritated by the blood coming from other parts such as the nose, mouth or esophagus. It is a significant fact that blood in the stomach acts as a foreign body which incites to vomiting, and the importance of a careful examination of the nasopharynx in obscure cases is evident. Very often doubt exists as to whether the blood comes from the stomach or the lungs, for although from the former organ it is dark, acid and mixed with food, and from the latter brighter, alkaline, and intermingled with air, this difference does not always hold, since with a pulmonary hemorrhage the blood may first be swallowed or may be coagulated and changed in a cavity and since with gastric bleeding the amount may be so profuse that it may be brought up unchanged and perhaps partially aspirated and coughed up. Other rarer causes are perforated aneurisms of the aorta, duodenal ulcer and hysteria. Among the different caustics, those most frequently causing hematemesis are acetic acid, lye and the mercury salts. The color of the vomited blood depends upon the amount of acid in the stomach; if this is normal the color is already dark after five minutes, so that a bright red tinge generally speaks for profuse bleeding, such as occurs with ulcer. When the color and microscopical examination are not sufficient for diagnosis, chemical tests must be applied and the most accurate of these is performed by adding one-third the amount of acetic acid and as much ether, shaking and then decanting the latter and adding 5 to 10 drops of tincture of guaiacum, and 15 to 20 drops of old oil of turpentine when a violet color, intensified by chloroform indicates the presence of blood. In Werlhoff's disease, yellow fever, plague, sepsis, etc., the vomitus is acid, dark and suggestive of coffee-grounds, or even tarry, since the normal secretion of the stomach generally goes on. The prognosis depends of course upon the amount of blood lost, and the character and severity of the underlying disease, and the importance of a correct estimation of the severity is perhaps greatest in case of ulcer, since the first hemorrhage, though slight, is followed by increased secretion of acid, which has a tendency to dissolve off the protective covering and thus lead to perhaps more severe recurrences. In most of the other diseases, hematemesis is a bad sign.

**Hemorrhagic Erosion of Stomach.**—It is only recently that gastric erosion, a frequent find at autopsies, has come to be regarded as a distinct and separate disease. Anatomically the erosion is very superficial and involves only the upper part of the mucous membrane, while the deeper structures show a round-cell infiltra-

tion. S. MINTZ (*Zeitsch. klin. Med.*, vol. 46, Nos. 1-4) has observed two cases and finds that there generally is gastric pain and a sense of great weakness with emaciation, while objectively the presence of small particles of mucus after lavage with the organ free from food is characteristic. The pains are never as intense as with ulcer, are not restricted to a circumscribed area of the stomach, and begin  $\frac{1}{4}$  to  $\frac{1}{2}$  hour after feeding, to last two or more hours. Vomiting may also occur and may simulate nervous emesis. The chemical analysis of the stomach is of no value, since all degrees of acidity may exist; neither does the motor function suffer any constant changes. Treatment demands lavage with one to two per 1,000 silver nitrate solution and the administration of large doses of bismuth. In general, the food should be somewhat stimulating, and accessory measures are endogastric galvanization, hydrotherapy, condurango, nux, iron and change of climate.

**Fatty Transudates.**—Milky fluids in serous cavities may have a two-fold origin through transudation of chyle from the lymphatic vessels, or through fatty degeneration of morphological element. S. MUTERMILCH (*Zeitsch. klin. Med.*, vol. 46, Nos. 1-4) finds that the diagnosis can only be made by microscopical examination, for in the latter class the droplets of fat occur in aggregations which show that they belong to a cell. It is, however, possible that the degenerative process may go so far that the outline of the cells is no longer apparent, when the presence of more than a trace of glucose and the increase of the milkiness with a fatty diet will speak for the lymphatic origin. Certain authors have even gone so far as to feed with special forms of fat, then examining for these in the transudate. The appearance, specific gravity, amount of albumin, lecithin and cholesterol are of no importance, and in many even the microscopical examination is unsatisfactory.

**Aneurism of Hepatic Artery.**—The symptomatology of hepatic aneurism is discussed by A. SOMMER (*Prag. med. Woch.*, September 8, 1902), who describes the typical picture as including pains in the right hypochondrium or epigastrium, intermittent jaundice and repeated, profuse hemorrhages from the upper part of the bowel. With the great rarity of the condition, the diagnosis is made but seldom, and cholelithiasis or duodenal ulcer is generally thought of especially since all three symptoms do not always occur together. The most constant of these is the pain. In the pathogenesis trauma plays an important rôle, and rather often there is a history of some preceding infectious disease, such as pneumonia, typhoid or osteomyelitis, so that a certain number may be mycotic in origin.

**Traumatic Nephritis.**—That a nephritis may develop secondary to severe abdominal injury, it is important to decide for legal reasons, and the case of H. CURSCHMANN (*Münch. med. Woch.*, September 22, 1902) makes it seem probable, for the only possible cause of constant albuminuria with cysts was the occurrence of a severe, almost fatal fall several years prior to the examination. It is likely that the lesion in these cases is a strictly circumscribed, interstitial process. The absence of all changes in the circulatory organs was characteristic and spoke for the involvement of only a small portion of renal tissues, enabling the urea, etc., to be excreted as before. It is possible that many obscure cases of albuminuria may have a similar origin.

### PATHOLOGY.

**Simple Method for Quantitative Estimation of Albumin in Blood.**—The following method is given by A. JOLLES (*Münch. Med. Woch.*, September 23, 1902) as surpassing others in simplicity. By means of a pipet, 0.2 c.c. of blood is removed from the lobe of the ear and dissolved in about 120 c.c. of water, which is heated



to boiling with one c.c. of sulphuric acid. A permanganate solution containing eight grams per liter is then added until the precipitate no longer dissolves. The solution is then concentrated to 25 c.c. and neutralized with lye, and finally the nitrogen determined in a special azotometer with a hypobromite solution. Of the cases on which this method was tested it was found that the amount of albumin is diminished in diabetes, cirrhosis, catarrhal jaundice, leucemia and anemia, is normal in syphilis, Basedow's disease and chronic nephritis, and increased in acute nephritis and in the fever of influenza.

**Influence of Bile upon Resistance of Red Cells.**—The increased resistance to sodium chloride solutions observed in the red cells of icteric patients has been variously interpreted. G. VIOLA and B. TARUGI (Rif. Med., September 16 and 17, 1902) have made a study of the subject through observation of the influence of the bile upon corpuscular resistance in vitro and in the circulation, comparison of results thus obtained being made with corpuscular resistance in 10 clinical cases of icterus. The question was especially considered from the standpoint of Chane's hypothesis; i. e., that in icterus resistance is increased by the bile-salts through their power to destroy the least resistant red cells. Ample proof of the hemolytic power of bile over such cells is afforded by the experiments in vitro and by the results of injection of bile into the blood. Not so was it, however, in the clinical cases, for there was actual increased resistance of all red corpuscles—as measured by the authors' special method—in the majority of icteric cases, whether acute or chronic. The authors believe that a special condition, the exact nature of which is not known, exists in icterus, which acts through the plasma upon all the red cells, causing an actual increase of their resistance; and as this action is not exercised when bile is brought in direct contact with the blood, it follows that it is not attributable to any of the normal constituents of bile.

### SURGERY.

**Therapy of Hour-Glass Stomach.**—The surgical treatment of hour-glass stomach is frequently more difficult than other operations on the stomach, since the anatomical relations may be very considerably altered and it may be difficult to decide which procedure is best. The following operations are given by A. SCHMITT (Münch. med. Woch., September 16, 1902): (1) The digital or instrumental dilatation of the stricture; (2) gastropasty, on the type of pyloroplasty; (3) gastro-anastomosis; (4) gastro-enterostomy; (5) resection of the strictured portion; and (6) a combination of all these various methods. Gastro-enterostomy ensures the promptest and safest emptying of the stomach and most successfully prevents the formation of new ulcers. The communication must be made with the distal sac, which generally is sufficiently large, and it is the method of preference where adhesions do not make it impossible. Gastro-anastomosis is another excellent procedure, especially when the communication is made below the stenosis near the greater curvature, since otherwise a spur is formed. It is indicated where the cardiac portion is much the smaller, where the two sacs can easily be approximated, where the cicatricial tissue is not too broad, and where other ulcers probably do not exist. Gastropasty is the quickest and easiest of all, but has the disadvantages that the incision must be made in poorly nourished scar-tissue, that an ulcer may be unwittingly cut into, and that a secondary contraction may occur. It is indicated where the scar is small and yet the stenosis marked, where other ulcers and adhesions, especially in the pyloric region are absent, and where other operations are not feasible on account of immo-

bility of the parts or poor condition of the patient. The chances of doing a total transverse resection are but few since this requires a small movable scar without adhesions and with good general condition, and there is some danger of a giving of the sutures. Simple dilatation is hardly ever permissible. The congenital hour-glass stomach rarely requires treatment, but for the acquired, an early operation is always indicated, and it is best not to wait until the patients are emaciated by months of suffering.

**Cancer of the Penis.**—Partial amputation of the penis should never be thought of in case of carcinoma, for the extreme vascularity of the organ makes the spread of the disease rapid, and the only chance of complete recovery lies in the early radical extirpation of the organ. E. W. LEE (N. Y. Med. Jour., September 20, 1902) has performed 11 total amputations and has never known of a recurrence when the disease was confined to that organ at the time of operation. The diseased pendent portion of the organ is wrapped in carbolyzed gauze and the parts thoroughly sterilized. The penis should be transfixed near its root by two straight needles and a rubber band placed between them. The pendent portion is then removed and a median incision made through the scrotum, the two halves being separated down to the corpus spongiosum by blunt dissection. A metal catheter is then passed, the ligature being slightly loosened. The corpus spongiosum is then dissected away from the corpora cavernosa and the urethra cut transversely behind the ligature. The urethra is then sutured into the posterior extremity of the median incision behind the scrotum, and the crura of the cavernosa are removed from the pubic arch by the use of periosteal elevators. There may be some extravasation of urine into the scrotal tissues, but no serious consequences are liable to occur.

**Cure of Wounded Liver by Tampon.**—An interesting case of incised wound of the liver is reported by E. FORRUM (Rev. Méd. Cir. Hab., September 10, 1902). The wound, which was four cm. long, was at first supposed to be confined to the skin, and was accordingly sutured. Evidence of internal bleeding becoming manifest six hours later, the wound was reopened, and exploratory laparotomy revealed a wound of the liver some six cm. in depth. A suggestive feature in the treatment of the wound by tamponade is the final control of hemorrhage by saturation of the gauze tampon with gelatin (five per cent.), two severe hemorrhages at intervals of 48 hours having necessitated the removal of the plain gauze previously employed. The patient made a good recovery within 30 days.

**Perforating Ulcers of the Duodenum.**—In 1900 this subject was most carefully and thoroughly worked up by Dr. Robert F. Weir, who delivered an address upon it before the American Surgical Association. Nineteen additional cases in which operation was done have been collected by J. B. MURPHY and J. M. NEFF (N. Y. Med. Jour., September 20, 1902), and the salient points of the disease are reviewed. Duodenal ulcer is the cause of death in from 0.2 to 0.4 per cent. of cases, and the ratio of gastric to duodenal ulcers is about twelve to one. They may occur at any age, but most frequently between thirty and forty or from forty to fifty. The great majority of duodenal ulcers are formed in males. Out of 176 cases reported by Weir 144 were found in men. Among coincident lesions which seem to have some relation to duodenal ulcers are mentioned burns, kidney disease and pulmonary tuberculosis. The association between these conditions is difficult to explain. An embolus entering the circulation at the site of a burn may cause a septic infarct in the wall of the intestine. The sclerosis of arteries accompanying kidney disease may account for the diminished arterial supply



of areas within the gut. The most widely accepted theory in regard to the causation of duodenal ulcers is that they are due to the same cause as gastric ulcers. Hyperchlorhydria is an essential factor. The duodenum is not protected from the acidity of the gastric juice above the papilla, through which empty the secretions from the liver and pancreas, and it is in this first portion that nearly all ulcers occur. Local infection, embolism, or thrombosis and foreign bodies are also given as efficient causative factors. Perforation occurs in from 40 to 60 per cent. of cases and may lead into the general peritoneal cavity; the retroperitoneal tissues or adhesions may form to one of the adjacent organs and perforation occur into it. Either a general or localized peritonitis may follow, depending upon the location of the perforation and the formation of adhesions. The three cardinal symptoms in their order of importance are: (1) Pain; (2) melena or hematemesis, and (3) vomiting. The pain resembles that of gastric ulcer, but is usually less severe and may radiate downward or to the back. It is about one inch below the gall-bladder, and when characteristic comes on from two to four hours after eating. It may be sudden in onset and colicky in character. Hemorrhage may manifest itself either through the stomach or bowel, usually by the latter route. Weir states that it occurs in about one-third of the cases. Repeated small hemorrhages may cause death before the blood appears externally. Vomiting is relatively rare, being present in only about 17 per cent. of cases, and is not usually characteristic unless it comes on from two to four hours after eating. Icterus is rare. It is important to note that in one series of cases no history of trouble could be elicited previous to perforation or the presence of hemorrhage. The symptoms of perforation are usually sudden and violent in their onset, generally coming on after the ingestion of a meal. Pain, which is very severe and usually referred to the epigastrium, is the first symptom, but it frequently is later referred to the right iliac fossa, due to the gravitation of the fluid in that direction. The subsequent course of the symptoms depends upon the location and extent of the peritonitis. The conditions which must be thought of in diagnosis are: (1) Gastric ulcer; (2) cholelithiasis; (3) hyperacidity without ulcer; (4) acute fat-necrosis, and (5) intestinal obstruction. It is frequently impossible to distinguish it from gastric ulcer, but duodenal ulcers occur more frequently in men; the pain appears later after meals; vomiting does not relieve pain, and is more rare than in gastric ulcer. Dyspeptic symptoms are slight and melena is more frequent. Acute fat-necrosis is the most difficult disease in which to make a differential diagnosis. The pain in both is intense, but the collapse and depression are usually more pronounced in fat-necrosis. One very important point, ever, is that there is no leucocytosis in acute fat-necrosis, while pronounced leucocytosis with a primary elevation of temperature is the rule in perforation. The success of treatment depends upon the time of operation largely, for a general peritonitis is almost certain to follow. The abdomen should be opened by an incision four to six inches long in or along the right border of the rectus, and the appendix and gall-bladder first inspected. When the perforation is found the intestine should be freed and the opening closed by a double or triple line of interrupted silk sutures of the Lembert type. The failure to free the intestine from the neighboring tissues is the usual cause of failure in the operation. Irrigations should not be used unless there is a pronounced destruction or exfoliation of the endothelium of the intestines.

**Gunshot Wounds of Abdomen.**—A remarkable case, in which there were 18 perforations of the intestines as a result of a gunshot wound, is reported by R.

F. AMYX (Med. Rec., September 20, 1902). A laparotomy was done within two hours of the accident, and even in that short space of time adhesions had formed between the omentum and the colon and cecum, entirely shutting in the small intestines beneath the omentum. Two perforations were found in the ascending colon and the others in the small intestines. The contused tissues around each perforation were excised and the wounds closed by the Czerny-Lembert suture. As there were 12 perforations found in a section of the jejunum not more than 11 inches long, this segment was excised and a Murphy button used. The peritoneal cavity was flushed out with saline solution, and 12 gauze drains were inserted into the various recesses of the peritoneal cavity as follows: Above the omentum; below the omentum; above and below the mesentery; into the pelvis, and up toward the liver. It is very important that drainage should be instituted, for the bullet always carries with it the contents of the intestines or organ through which it passes, and even thorough irrigation is seldom sufficient to remove all infective material. The drains should not be removed for five or six days and then only a small portion should be withdrawn at a time.

### BACTERIOLOGY.

**Bacillus of Malignant Edema.**—A cultural and biological examination of the bacillus of malignant edema, conducted by R. GRASSBERGER and A. SCHATTENFROH (Münch. med. Woch., September 23, 1902) led to the following results: The bacillus shows on the different media the same shape and grouping, and after treatment with iodine a large amount of granulose is always detected. It is a strictly anaerobic bacterium, with abundant flagellæ, and spore-formation is a prominent feature, especially when grown on sterile meat. The colonies on gelatin consist of cystic spaces filled with a turbid fluid; those on agar show many branches into the surrounding medium. Both fermentation and putrefaction can be induced, but the latter process cannot advance very far, since the bacillus lacks the power to redissolve the coagulated albumin. In milk the casein is precipitated with slight gas-formation. The growth on solidified cow-serum is characteristic, since it is very rapid, with the formation of gas and fluid and the development of a urinous or sulphurous odor. The soluble toxins could not be concentrated. For guinea-pigs the bacillus is very highly virulent, and its powers are not diminished by passing through the bodies of the animals.

### THERAPEUTICS.

**Treatment of Erysipelas with Diphtheria Antitoxin.**—DR. ZWETAEFF (Prac. Vratsh, No. 22, 1902) has employed hypodermic injection of diphtheria antitoxin in two cases of severe erysipelas of the face with favorable results. He explains this non-specific action of the antitoxic serum by its stimulating action on the phagocytic properties of the cells.

**Treatment of Aneurisms with Gelatin.**—It is pointed out by M. HALPERN (Zeitsch. klin. Med., vol. 46, Nos. 1-4) that in nearly all the cases of aortic aneurism which were reported as being successfully treated with subcutaneous injections of gelatin, dieting, rest and the iodides were also resorted to, and it is hard to say how much of the improvement is really due to the gelatin. Two cases were carefully investigated, in that they were allowed to move about, with the ordinary diet and no medication except gelatin. The size of the aneurism was carefully controlled in both by repeated X-raying. Absolutely no improvement followed. On the contrary the sacs were found to be larger on each subsequent radiograph, which tends to show that the supposed efficiency of gelatin is a popular delusion in medicine.



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## THE PHYSICIAN'S INTEREST IN POLITICS.

It is an old saying, but not any truer for that reason, that for the physician to have any serious interests outside his profession is almost sure to be fatal to his success as a practitioner of medicine. Politics especially has been the subject of many warnings to young medical men on the part of their elders, until it has come to be considered quite the usual thing for the medical man to pay so little attention to elections and cognate affairs that he must even be cajoled into registering and voting except upon special occasions involving some great issue.

Surely this is just as it ought not to be. Very few educated men in the community are brought so closely in contact with the different classes of society as is the physician, and few are able to judge so well as he not only of the existence of abuses but also of the most feasible methods of reform.

At the present time the medical profession of the world is unselfishly engaged in the great problem of lessening physical evil and making human happiness more possible. There are many things connected with this commendable endeavor in which the best efforts of enlightened sanitarians may be rendered abortive by politicians and office-holders. Such an unfortunate play of cross-pur-

poses is not infrequent, and it will continue until the more educated of our citizens take that interest, especially in local and municipal politics, that will insure office-holders of a better class. Physicians, far from withdrawing themselves from such civic duties, must rather set the needful example, since they should best appreciate the evils which exist.

The late Prof. Virchow furnished a precious model for his colleagues in this respect. Busy beyond the powers of all ordinary men with his investigations in pathology and anthropology, and with his teaching duties at the University of Berlin, he yet found the time to serve as a member of the city council of Berlin for over forty years. To him was committed the difficult task of arranging for a proper water-supply and an efficient method of disposing of the sewage of Berlin. His success in solving these problems was a source of his naive self-congratulation when on his eightieth birthday he looked back upon his career.

To Virchow more than to any other was due the absence of political jobbery in those immense municipal undertakings, whereof the magnitude and wherein the possibilities of plunder can best be appreciated through realization of the fact that in thirty years Berlin has increased in population from about 500,000 to considerably over 2,000,000 and that the city, standing on a level plain of wide extent, had to create huge sewage farms for the disposal of its refuse.

But Virchow did not even stop with an interest in municipal affairs. For nearly forty years he was a member of the lower house of the Prussian legislature. Here he was the leader of the Liberal party and Bismarck's unappeasable opponent. He became so prominent in this sphere that not a few Germans whom we have met—especially in this country—knew Virchow very well as a political leader though scarcely at all as a scientist. In the legislature he was once more the "watch-dog of the treasury," having been chairman of the finance committee. To him is attributed the present arrangement of the Prussian budget, said to be one of the best solutions of a great financial problem in Europe.

Virchow's example served to keep the medical profession of Germany interested personally in the political affairs of their country. He was a patriot, not a partisan. Much as he was opposed to Bismarck's policy which led up to the Franco-German war, no one rendered more efficient service once the war was actually begun.



Virchow does not stand alone among European medical men in his intelligent and influential interest in politics. Dr. Baccelli, in Italy, is an important member of the upper house, to whom many sanitary questions are referred by the Government. In France there have always been a number of prominent physicians and surgeons interested in political affairs and ready to bear their share of the burdens of securing good government for the people. The result is a greater attention to political matters by the whole medical profession of those countries, and less of the unfortunate feeling that such things are not for the practitioner.

Here in America the most serious danger ahead for our Government is the exclusive management of our affairs by the class called politicians, and the increasing dearth of interest on the part of the professional and business men of the country. Municipal affairs especially suffer from this lack of devotion to civic interests. Duty always implies sacrifice, and intelligent participation in politics will surely demand the expenditure of time. It will not, however, be wasted. As a matter of fact, an intelligent and consistent interest in politics on the part of physicians generally would insure readier acknowledgement of their professional claims to legislative attention, and would effectually prevent the display of prejudiced animosity that sometimes characterizes the attitude of legislators towards measures well calculated to further the interests of the general public as well as those of medical men in particular.

We understand that in New York city the introducer in the State Assembly of the objectionable bill proposing to extend the benefits of medical registration to the osteopaths was turned down for renomination by his political party mainly because of the feeling aroused by that action. In Colorado, earlier in the present year, a prominent candidate for United States Senator, a former Governor, found his chances ruined because of a gratuitous insult to the medical profession in the veto of a medical registration measure.

It would seem then that medical men are at length to have due weight, and that even at present those who have the best idea of popular feeling appreciate that medical opposition may mean much. There remains, however, a great deal to be done in this matter. There is entirely too little individual interest. Personal influence must be exerted, and physicians must keep themselves informed of conditions and in touch with the well-

intentioned. If each man will do his little, however trivial it may seem, the total accomplishment will be beyond all anticipation.

#### POLITICS AND OUR PUBLIC CHARGES.

SUFFICIENT time has elapsed to show the pernicious effects of the workings of the Brackett Bill upon the inmates of the hospitals for the insane in New York State. We grieve to say that our prophecy has come true. There is no joy in saying "I told you so" when the prognostication of evil has come to pass; but there is a duty to be performed in keeping before the mind of the medical as well as the lay public the fact that until the present law is modified the evil will roll up a debit of which the present items are but preliminary figures.

By this bill the Governor has destroyed a system which has been the growth of many years and has been the pride of the State and the model after which other States have founded their institutions. He has centralized all real power in a commission which is under his or other politicians' control, by making all stewards and practically all employees accountable, in fact, only to the centralized commission in Albany. The Governor and his commissioners therefore hold the power of dictating annually the purchase of millions of dollars' worth of supplies, of removing at will any one of over four thousand employees, and of transferring any superintendent, physician or assistant physician to other asylums. This check upon physicians was a direct outcome of the decided stand that the superintendents took concerning the proposed reduction and the new schedule of rations that was to go into effect January 1, 1902, and the total abolition of the board of managers was a quietus upon their vigorous protestations against the starvation food allowance of the Odell dietary and against other ill-advised economies.

Now Governor Odell is claiming from the platform that the Lunacy Bill has effected a great "saving" to the tax-payers of the State, and is counting his "economy" as a strong card in his hand.

Just how valuable has the Governor's economy proved? Needed repairs have been neglected, the patients have been crowded together; they have been reduced in clothing allowance, and above all the food as scheduled in the Odell dietary has been shown to be cruelly insufficient for the proper nourishment of the insane. It



is the lowest allowance to which the State hospitals have ever been subjected.

The effects of the food reduction are only now becoming apparent. It is reported that scurvy has appeared among the patients, and the sick wards are fuller. There has been increasing restlessness and dissatisfaction among the patients, and a marked reduction in the number of patients able to work and the hours that it was possible for them to labor. Above all, there have been fewer recoveries in those cases in which the good food and medical treatment of the State institutions have been the means of restoration to health.

It is not the almshouse element that has made the New York State care of the insane so celebrated. The asylums are not filled with idiotic paupers who ought to be thankful to have a bed at night and a bowl of food when hungry. They are filled largely with patients who before their affliction were wage-earners, nearly all of whom have received education and once were independent. The object and glory of New York's care of her insane has been the restoration of many of these patients to their normal state. The effect of grief, fright, loss, financial worry, and the strain of trouble may often be overcome by proper treatment, which includes rest, seclusion, good food and sheltering care. Cut these off, and make the physicians helpless to remonstrate, and the New York State system, which has been so successful will be reduced to that of an old-fashioned madhouse.

It is towards this goal that Governor Odell's "economies" are directing our New York institutions for the insane.

#### THE NEW BELLEVUE.

We turn to a suggestive phase of the *positive* value that *non-political* interference may have in municipal affairs. By an act of legislature, sanctioned by Governor Odell, the Bellevue system was changed to one the counterpart in many ways of that which has been in force in our State institutions for the insane up to its recent overthrow.

Many of the beneficial results which have been the outcome of this wise move have been discussed from time to time in our columns, and the slow but sure reconstruction of Bellevue is becoming a hope realized.

In no department of the city's care of its unfortunate has the need of reconstruction been

more acute than in the Insane Pavilion, and it is with a great sense of joy that we note the many changes for the better which have taken place in this portion of the hospital.

Although more things remain to be done in the way of sanitary improvement and in the adaptation of the present building to the needs of the insane, yet much has been done by increasing the accommodations and by changing the methods of treatment. The Insane Pavilion is no longer the horror of the city's poor and the gold-mine of the yellow journals. It has been transformed into a well-organized psychopathic hospital for the acute insane.

Under the old system of management a single physician without an assistant was in charge. He was not required to have had any training or experience in psychiatry, and his care was hardly more than that of a custodian. In his hours of absence any emergency occurring in the insane wards was attended to, to the best of their ability, by the internes of Bellevue proper, whose duties in no wise included this additional burden.

This arrangement did not appeal to the Board of Trustees as being especially enlightened, and a resident alienist with a resident assistant has been appointed. The selection of these incumbents has been made from among the well-qualified men of the State. Dr. F. Packer, who has been appointed to the chief position of responsibility, has had more than ten years' experience in State hospitals for the insane, and has come fresh from his work at the Matteawan State Hospital for Insane Criminals. His assistant, Dr. M. S. Gregory, had been Assistant Physician at Kings Park Hospital, Long Island.

Under these men a modern system of care and treatment has been introduced that has completely transformed the insane wards of Bellevue. The use of mechanical restraint has been abolished, except in cases where it is necessary to prevent acts of violence towards patients or nurses. The belt, cuff and waist-straps have been discarded. The wholesale use of sedatives as a means of restraint has been discontinued, and when necessary their doses are carefully prescribed. Many of the patients have been furnished with some form of employment, and their treatment has been recorded, with observations on their general health and mental condition, as in every well-organized hospital for the insane.

We do not quote from the report that mentions the inauguration of these new methods, but we speak from personal observation. There is



a different atmosphere about the whole place. It is charged with work, hope, ideals, instead of discouraged ambitions and cynical contempt for the political powers that clogged the wheels of progress.

Now the Bellevue Insane Pavilion is a potential agency for good which may become a focal center of psychiatry in New York city. It may, now that an intelligent and distinguished body of men govern the city hospitals, grow into a large and thoroughly organized receiving-hospital for the insane, where students can avail themselves of its vast material, and where cases can be properly classified for future treatment. In short, it may become the ideal receiving-hospital for the mentally afflicted that it ought to be. But we have been so inspired with hope at what has been accomplished in a few months with Bellevue that we dream dreams.

## ECHOES AND NEWS.

### NEW YORK.

**The New York Obstetrical Society.**—The following officers were elected at the annual meeting of this society, Tuesday, Oct. 14, 1902: President, Egbert H. Grandin, M.D.; First Vice-President, J. Clifton Edgar, M.D.; Second Vice-President, G. W. Jarman, M.D.; Recording Secretary, W. S. Stone, M.D.; Assistant Recording Secretary, H. C. Taylor, M.D.; Corresponding Secretary, E. L. Tull, M.D.; Treasurer, J. Lee Merrill, M.D.; Pathologist, W. S. Stone, M.D.

**To Study Epilepsy.**—The National Association for the study of epilepsy and the care and treatment of epileptics will begin the meetings of its annual session at the Academy of Medicine in this city, 17 and 19 West 43d Street, at 2.30 P.M. Wednesday, November 5. The following program has been arranged: Presidential Address, Frederick Peterson, M.D.; Reports on the Progress in the Public Care of Epileptics, W. N. Bullard, M.D.; The Causes of Epilepsy in Early Life, with Notes on Treatment, Abram Jacobi, M.D.; The Pathology of Epilepsy, Adolph Meyer, M.D.; The Surgical Treatment of Epilepsy, Roswell Park, M.D.; The Legal and Social Standing of the Epileptic, Edgar J. Spratling, M.D.; Examinations in Epilepsy, with Records and Notes on Treatment, W. N. Moyer, M.D.; The Problem of Epilepsy: some suggestions to its solution, with demonstrations on the lesions, L. Pierce Clark, M.D., and Thos. P. Prout, M.D.; The Colony System for Epileptics, illustrated with lantern views of the Craig Colony at Sonyea, Wm. P. Spratling, M.D.; The Treatment of Epilepsy, Dr. Wildermuth (Stuttgart). Physicians and charity workers generally are invited to attend the meetings. The Association was founded for these objects: To promote the general welfare of sufferers from epilepsy; to stimulate the study of the causes and methods of cure of this disease; to advocate the care of epileptics in institutions where they may be educated, acquire trades and be treated by the best medical skill for their malady, and to assist the various States in making proper provisions for this class. The association has no membership dues. Applications to join it should be made to Dr. W. N. Bullard, chairman of the executive committee, 89 Marl-

boro Street, Boston, or to Dr. W. P. Spratling, the secretary, at Sonyea, N. Y.

**The Crusade Against Sore Eyes.**—In a recent issue of the *MEDICAL NEWS* we called attention to the great prevalence of contagious eye diseases in this city. There is little doubt that the Quarantine officials have not been as careful in scrutinizing the eyes of immigrants as they should have been, and the present fight that Commissioner Lederle is called upon to wage might have been in large part avoided. We quote from the New York Sun the following outline of the situation as it now presents itself:

"Dr. Lederle's request for an appropriation to enable the Health Department to employ more physicians for the purpose of stopping the spread of trachoma among the pupils of the public schools and from them to others of the population, marks the beginning of a real effort to check this disease in New York, after years of unsuccessful effort by public-spirited oculists to have the city authorities take the matter up. Sixteen years ago a leading oculist went to Albany, taking with him children blind from this disease as an exhibit before the Legislature. His effort to have something done by the Legislature and by the city authorities met with no success. In the meantime matters had progressed so far that last spring Dr. Lederle's examiners found, in only 36 schools, more than 6,000 pupils suffering from this contagious disease. Not one of the 36 schools was free from the disease. It was more prevalent in the schools of the lower East Side, but it had extended everywhere. The percentage of diseased pupils varied from 3.2 per cent. in one of the better class West Side schools to 22.2 per cent. in an East Side school. Boys were found with it more frequently than girls. In one school the percentage among the boys ran up to 28 per cent. Of the 6,670 pupils found with the disease in these 36 schools, 30 per cent. were affected in so severe a form that an almost immediate operation was necessary. On the first day of the new school year 573 pupils were turned away by the Health Department's examiners because of contagious eye disease, in almost every instance trachoma.

Dr. Lederle's secretary, Mr. Wadsworth, who has a class in one of the downtown settlements, learned incidentally during the summer that some of the better class of the residents of the sections of the city most afflicted by the disease had learned instinctively to guard against possible contagion from it. Mr. Wadsworth asked his boys one sultry evening if they had been swimming that day, and they all said no. He asked them why and they said that the clean people did not go to the floating baths because dirty people went to them. An investigation by the department showed that on one day 50 per cent. of the men using one of the floating baths suffered from trachoma. The ordinarily observant citizen who traverses the East Side downtown may see for himself the large number of sore eyes among the population. Many of the people regard the disease as merely an ordinary sore eye, and there lies one of the great difficulties encountered in efforts to stop the disease. The children may be cured of it and then become reinfected at their own homes. Since the beginning of the Health Department's present crusade Dr. Lederle has been in correspondence with the Surgeon-General's Office and with Immigration Commissioner Williams, the Federal Government having interested itself at once when the results of Dr. Lederle's examinations were made known. The Immigration Commissioner is now turning back many immigrants suffering from trachoma, and so vigorous has been this action that the steamship companies have been very much upset about it, as they have to transport the rejected persons at their own expense.



**Manhattan Dermatological Society.**—The regular meeting was held on Friday evening, October 3, 1902, at the residence of Dr. R. Abrahams, 43 St. Mark's Place, Dr. W. S. Gottheil presiding.

Dr. J. Sobel presented a case for diagnosis. Male patient, about forty years old, highly neurotic, shows involvement of left testicle, and epididymis; there is no history of trauma, lues, gonorrhea nor tuberculosis; patient, however, has a prostatitis and a vesiculitis; the swelling is firm and painless. Dr. Sobel is in doubt as to its exact nature. Patient also shows pigmentation (maculae cerulae) along the lower right axillary line, the result of pediculi pubis et corporis.

Dr. Oberndorfer thought the testicle little involved, it being hard and firm; the epididymis, mainly affected, he regards as either tuberculous or specific. Dr. Cocks thought it to be specific. Dr. Weiss also finds the epididymis chiefly involved and considers it tuberculous. Dr. Abrahams could only account for the prostatitis and vesiculitis as due to a previous gonorrheic process, and the testicular involvement as a late gonorrheal complication.

Dr. Gottheil sided with Dr. Sobel, believing the testicle largely affected, and regarded the condition as specific.

Dr. Sobel also presented his case of sclerema neonatorum recently shown, to show the result of treatment. Improvement quite marked; a single patch only observed over left deltoid region. Prognosis he considers extremely good. To massage he attributes the excellent result, rather than to any particular virtues which mercury may possess.

An infant with a deep ulcer occupying the coccygeal fold, following intertrigo, was also shown by Dr. Sobel; he called it intertriginous ulceration. Dr. Oberndorfer said it was unusual to see such deep ulceration following intertrigo. Dr. Weiss believed secondary infection had much to do with such large and deep loss of tissue. Drs. Abraham and Gottheil called it *echthyema*, to which Dr. Sobel replied that the ulceration of *echthyema* was a superficial process and so he took exception to that diagnosis.

Dr. L. Weiss presented three patients.

1. A woman of thirty-five years, shows marked yellow pigmentation of the face, present three years. The patient has an affection of the liver. Dr. Weiss terms the condition "chromosis symptomata."

2. A case of pityriasis rosea corporis; much modified, however, by recent treatment. The interesting feature was the assurance of Dr. Weiss that after repeated examinations of scales and sections no mycelia were found.

3. A case of lichen planus chronica in a male of fifty-five years, affecting scalp and neck. The patient doing well under Unna's ointment.

Dr. W. S. Gottheil presented a child of five years with deeply excoriated fissured lips; a squamous desquamating patch over both eyebrows; two oval (similar) patches on the buttocks and on the palms; adjacent mucous membrane of mouth and gums affected, and the anal region shows a large moist papule. He terms it "congenital frambesial syphilis," arriving at that diagnosis by exclusion. Dr. Kinch and Bleiman called it congenital syphilis. Dr. Weiss expressed some doubt as to its specific nature; the condition brought to his mind a rare affection termed "lichen hypertrophica labialis." Dr. Oberndorfer considered it an acquired lesion rather than congenital.

Dr. R. Abrahams showed the following four cases:

1. Case of atrophic cutis (previously presented). The lesion is progressive; in the newer areas involved marked hyperemia, as the initial physical sign shows to advantage.

2. Case of scleroderma diffusa; marked induration

of skin of lower right arm following a trauma; the process rapidly extended and now involves the upper trunk (except anterior chest), buttocks and abdomen. Locomotion is becoming difficult. Dr. Abrahams believes the entire body will soon be completely involved. Treatment, thyroid and massage. He will report results. Dr. Geyser stated that he found the static spark an efficient remedy in these two cases; it surely would have some effect on the indurated skin and in case 1 would relieve pain of ulceration.

3. A male of sixty years, showing closely studded papillary elevations upon mucous membranes and cheeks; present 15 years, causing no symptoms. Those present agreed that the condition was one of plugged mucous ducts, producing minute mucous cysts.

4. A case of glandular involvement along the sternocleido and clavicular regions. Began four months ago; patient coughs, but lungs negative; placed upon K I and mixed treatment and is doing well. Considers it specific. Dr. Wainwright calls it tuberculous; he believes the cough was produced by pressure upon bronchi by enlarged bronchial glands and that its disappearance was due to the influence of K I on enlarged glands generally. Such a chain of enlarged glands was not the picture of syphilis. Dr. Sobel said leucemia suggested itself to him. If a tubercular process was present, he thinks such a prolonged administration of K I would surely bring it out. Dr. L. Weiss does not consider it lues; leucemia or tuberculous most likely. Dr. Gottheil concurred in this.

Dr. W. S. Gottheil showed a case of chronic urticaria, covering a period of years. Treatment of no avail. Lesions present on face. An acute outbreak usually disappeared within 24 hours, but some lesions were permanent.

Dr. Geyser showed two cases, one of epithelioma involving angle of eye and nose, treated successfully by the X-ray, and the other one of tinea sycosis treated by the static spray.

**Death of Dr. A. M. Phelps.**—At a meeting of the Faculty of the New York Post-Graduate Medical School and Hospital, held on Oct. 8, 1902, it was resolved that a committee be appointed to draft a minute in appreciation of the professional life and services of their late colleague, Professor A. M. Phelps. The Committee subsequently made the following report, which was ordered to be sent to the medical journals for publication and to be spread upon the minutes of the Faculty.

In the death of Professor A. M. Phelps our school has lost a teacher and the medical profession is deprived of a member whose energy cleared the way for great progress in his field of work during the past 20 years. His was the spirit of the pioneer. Not content with things that have been done, but ever restless to find new vistas with new horizons, his single-hearted devotion to the development of what is best in orthopedic surgery led him to engage in a constant warfare of ideas. No matter whether the ideas were those of colleagues or his own, no matter whether he was right or wrong, his energy gave life to the subject and set men to thinking. It is such active lives as his that keep subjects alive, that keep men aroused, and lead them to their utmost; and when this is for no selfish end, but solely bent in the interest of science, we have a public benefactor whose usefulness exceeds that of the capitalist who gives his million of dollars to the most worthy charity. The capitalist gains his fortune through his guidance of the work of others, and the scientist adds to the total of the world's knowledge by stimulating others to follow his lead of investigation, or to take long steps in progress at his suggestion. In the professions there is a tendency for men to fall



asleep upon the soft pillows of consensus of opinion, but men like Dr. Phelps realize that consensus of opinion is often wrong because it represents the lines of least resistance, and he turned all sleepers out and made them uncomfortable until they had made their own new opinions. Dr. Phelps was impatient with those who were contented in their work, and as impatient with himself, for he realized that great fields for giving help to suffering fellow men lay still undiscovered.

According to human experience greatness implies the possession of constructive motives, nobility of purpose, catholicity of view, erudition. Dr. Phelps's motives were always constructive, his ideals were of the noble sort that included no interest before the interest of the sufferer. His views were so comprehensive that he could not long remain a partisan in any field aside from that of definite knowledge. His learning was that of the man of alert conception and of trained memory. Dr. Phelps then was a great man, and his opponents are the ones who would say it, sooner than he himself would have acknowledged it.

It was not in our school alone, nor in the city, nor in the State, nor in America that his talents were recognized, but wherever in the world men are engaged in studying the things that he studied, he gave direction to their methods and force to their efforts. An influence like that of Dr. Phelps is that of the wireless telegraph, sending through invisible ether an impulse that is felt and that meets sympathetic response in minds that vibrate in unison at all distances, an expenditure of energy that finds its kinetic in the development of new knowledge. Yet he was not the one to say that he was right, only that he wanted to be right and that he wanted others to be right.

He was proud in his strength, yet modest in the presence of those who were stronger than he. Few knew this side of his character, but those of us who knew him best knew how much of humility there was beneath his forceful bearing.

And if we speak of Dr. Phelps as the surgeon, what shall we say of him as the citizen, as the friend, as the husband and father? Matters of public interest were matters with which he made himself conversant, and whether at home or abroad he formulated views of public affairs with a clearness of view that engaged the attention of statesmen. As a friend he was loyal almost to the point of weakness. His enjoyment of life and of his friends was that of a man whose spirit of camaraderie overlooked all failings. Beneath the stern exterior developed by men of his strength to resist external impressions, there was a heart so kind and sympathetic that a tale of woe or a pathetic sight moved him as it would have moved a woman, and his kindly deeds in response to the impulse of a great and generous nature were unknown to the world at large because he considered it beneath the dignity of a man to show any side excepting the one that accomplishes things by force.

Dr. Phelps has been taken from the home, from the profession, and from the world before his activities had reached their zenith, but the influence of such a life as his will last beyond the lives of those who felt his influence, and we, his colleagues, sorrowing in his loss, exult in the privilege that we had in knowing him.

ROBERT T. MORRIS,  
REYNOLD WEBB WILCOX,  
HENRY LING TAYLOR,  
Committee.

#### PHILADELPHIA.

**Increase of Smallpox in Pennsylvania.**—The State Board of Health reports 533 cases of smallpox during September, with 35 deaths. This equals the number

of cases for both July and August. The State Board is crippled in fighting the disease by lack of funds.

**Jefferson Medical College.**—Dr. A. Hewson has been elected Assistant Professor of Anatomy. This is a promotion from the position of Demonstrator of Anatomy which Dr. Hewson has held for many years.

**Editorship of the International Clinica.**—Dr. A. O. J. Kelly has just been made the editor of the International Clinica.

**An Old Coroner's Verdict.**—One of the curios of the coroner's office in Philadelphia is the verdict of a coroner's jury in 1806. The document is written on a leaf torn from a note-book and reads: "This is to certify that it has been the opinion of the Jury summoned on the death of Patrick John McFall that he came by his death by Strangling himself, he being in a State of Insanity. Phila., 9th August, 1806. John Dennis, Coroner."

**Pathological Society.**—The following officers for the ensuing year have been elected, practically all being reelections: President, Dr. C. W. Burr; Vice-Presidents, Dr. Alfred Stengel, Dr. Simon Flexner, Dr. Joseph McFarland, Dr. M. P. Ravenel; Secretary, Dr. J. D. Steele; Treasurer, Dr. T. S. Westcott; Recorder, Dr. David Riesman; Curator, Dr. Wayne W. Babcock.

**Bureau of Health Asks for Increased Appropriation.**—The Bureau of Health has asked for an appropriation of \$284,780 for maintenance during the coming year. This is \$75,300 more than the appropriation for the present year. The largest item is \$60,000 for the abatement of nuisances and for general expenses. It is said that \$25,000 is needed at once for the former purpose and nothing is available. Last year \$45,000 was spent for vaccination.

**Alvarenga Prize of the College of Physicians of Philadelphia.**—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about \$180, will be made on July 14, 1903, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the secretary of the College on or before May 1, 1903. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1902 was not awarded, the committee having decided that no essay of sufficiently high standard was submitted in competition. Thomas R. Neilson, M.D., Secretary.

**Sanatorium Treatment of Consumptives Opposed.**—The Record in a conservative editorial answers the arguments of certain persons who condemn the establishment of sanatoriums in Pennsylvania for the treatment of consumptives by open air, mental and physical rest and high feeding, as "a deplorable error" and as being "wasteful of money and wasteful of human life." These opponents of sanatoriums assert that the climate which is best for one consumptive is not best for another; that the establishments should be at certain places (such as Monte Carlo, the Canaries, Algiers, Mexico, California, etc.), all of which happen to be remote from the populous cities, and that certain eminent medical men should give their time exclusively to the selection of a resort for each patient. The Record says:



"It is a question of means. It is true that a particular poor consumptive of Philadelphia might do vastly better at Cape Colony, another at Samoa, another in the south of France, and so on; but as there is no fund to send each to the best place for him, it is certain that all the poor consumptives of Philadelphia would be very much better off at hospitals situated in the most healthful of near sites than they could be at their homes in the city. It is a fact of experience that a percentage of consumptives at the hospital are cured and that all are greatly improved in health. Therefore, as long as there is not money enough for anything better, it is absurd to condemn the system as erroneous and wasteful."

**Association of Hospital Superintendents.**—The fourth annual convention of the International Association of Hospital Superintendents was held in Philadelphia during the past week. Among the subjects receiving the greatest attention were the representation of physicians in the governing boards of hospitals and the political abuse of hospitals by interference in their management. Papers on the latter subject were read by Dr. Walter Lathrop of Hazleton and John Fehrenbatch of the Cincinnati Hospital. The former said that in Pennsylvania all appropriations for institutions must be recommended and approved by the Board of Public Charities, and while some may be favored more than others by means of political pull, and in fact are thus favored, the tendency of the board is to deal justly with all. Some hospitals ask for more than is necessary and expect to be cut down. Others ask for what is absolutely needed, and when this is reduced, the honest institution suffers. "The last legislature allowed only a portion of the sum which the State Board of Charities declared to be the minimum requirement for the insane hospitals, while it granted millions to private institutions. The Governor, however, still not satisfied, reduced the appropriations to State hospitals by several hundred thousand dollars, while approving the subsidies substantially as voted. That a State like Pennsylvania should postpone for years the most urgent demands for the feeble-minded and insane seems to be in part explained as a result of the large use of subsidies." "There is no doubt that politics plays a strong part in the securing of funds and in the administration of many of our institutions, State hospitals, as well as municipal institutions having a board of managers or trustees who are responsible to the public through the several powers that make appointments. In some instances these change with each political change and favors are distributed where they are thought to count most in political strife, or the control of votes for future use."

Dr. Fehrenbatch said that experience had demonstrated that wherever politics had entered the portals of a hospital it had not been for the benefit or welfare of that institution nor for the benefit of the political party that had attempted to exercise control. Where the State has the privilege of furnishing a limited number of patients free of charge in return for appropriations this privilege is often grossly abused by the members of the legislature that makes the appropriation. This is not only unfair to the taxpayers of the State, an injury to the medical profession, and an injustice to the hospital, but it tends to paralyze the very people that the members of the legislature select as the recipients of the State's bounty.

Dr. Rowe, of the Boston City Hospital, said that politics had no part in the administration of the Massachusetts hospitals, where it dictated no appointment from the superintendent to the lowest scrubber. This subject of politics and State charges is treated elsewhere in this issue.

## CHICAGO.

**Graduating Exercises of the Provident Hospital Training-School for Nurses.**—These exercises were recently held. Twenty-two nurses were admitted to the training-school this year, eight of whom received certificates of graduation.

**Demonstration of Dr. Ochsner.**—Dr. Edward H. Ochsner, during the course of the clinic, demonstrated a case of bilateral congenital hip-dislocation reduced by the Lorenz method some years ago, the patient having died in the meantime of some intercurrent affection. The pelvis was shown, demonstrating the almost perfect anatomical result which it is possible to obtain without opening the hip-joint.

**Banquet to Lorenz.**—A banquet was tendered to Dr. Adolph Lorenz, of Vienna, by the Chicago Orthopedic Society and the Chicago Surgical Society, Oct. 16. Dr. J. B. Murphy acted as toast-master. Dr. A. B. Hosmer responded to "Our Honored Guest." Dr. M. L. Harris, as President of the Illinois State Medical Society, and Dr. Wm. A. Evans, as President of the Chicago Medical Society, heartily welcomed him to Chicago with appropriate speeches. Dr. Frank Billings responded to the "American Medical Association," while Dr. John E. Owens spoke for the Chicago Surgical Society.

**Congenital Dislocations at the Hip.**—Professor Adolph Lorenz, by invitation, conducted a clinic at the College of Physicians and Surgeons, Oct. 13. He performed seven operations for congenital dislocation of the hip, or three more than he had ever treated in one day. The clinical amphitheater was crowded with general practitioners and students. In these operations Professor Lorenz and Dr. Mueller were actively assisted by Dr. Dexter Ashley, of New York, by Dr. John L. Porter, and by Dr. T. A. Davis, of the staff of the College of Physicians and Surgeons. Most of the members of the faculty of the College witnessed the operation. Professor William E. Quine introduced Professor Lorenz.

**Agas of the Patients.**—Three of the patients operated upon were seven years of age, one four years, one nine years, and the last and most difficult case was eleven. The manipulations necessary in this case were extreme, and Dr. Lorenz stated and though normally the elasticity of the great blood-vessels near the hip-joint saved them from injury, in some cases, such as the last one, they were in great danger and if broken would require exarticulation of the hip-joint. The pain and discomfort after the operation, he said, were minimum, as the tension, which was the principal factor in all such cases, had been done away with by his extreme manipulations. The series of operations was the most striking ever seen in Chicago. The actual manipulation necessary for reduction averaged about four minutes, and in several instances the click of the bone going into place could be plainly heard.

**Bulletin of the Health Department, Week Ending Oct. 18.**—The gratifying decrease of typhoid, heretofore noted, remains about the same as to mortality, but a marked change has developed in the location of the deaths since the first of the month. Three weeks ago the great majority of deaths has occurred in the slum districts on the West Side, east of Halsted street; but since then the deaths in that region have greatly diminished in number, while a far greater proportion now occur in the best residence districts of the city, especially on the South Side, in which the sanitary conditions and the water supply are the best. This development was foreshadowed in the bulletin for the week ending Sept. 27, in which it was said that, "aside from a probable increase, due



to the return of summer vacationists, who may have contracted the disease elsewhere to develop it at home, the department believes that the highest figures of typhoid mortality have been reached, and that the disease may no longer be regarded as epidemic. An improvement in the sanitary quality of the water supply, which was observed a week ago, has been much more marked during the last week, especially in the samples from Lake View, the four-mile and the Carter H. Harrison tunnels. This improvement is reflected in the diminishing number of deaths from the acute intestinal diseases, which have been fifty, forty-four and twenty-seven, respectively, for the three weeks of the month. Notwithstanding the good pasturage an increased proportion of samples of milk below grade have been found by the milk inspectors; but this is largely due to the fact that their labors have been directed to the poorer districts. The department has resumed the publication of the names and addresses of dealers who sell "skimmed milk" as "whole milk," and it rests with consumers to punish these by refusing to further patronize them. The dirty milkman is even more dangerous than the dishonest one, and the war against dealers whose facilities and depots indicate that they cannot handle milk properly will be waged with more severity than heretofore. During the week several samples of milk have been found adulterated with formalin—for which there is even less excuse than in hot weather; suits have been begun against these offenders and will be pushed rigorously. The 445 deaths reported during the week represent an annual mortality of 12.73 per thousand of population, or an increase of more than 10 per cent. over the rate of the previous week, when there were 42 fewer deaths reported. The principal causes of the increase and the numbers in excess were: Pneumonia, 22; nervous diseases, 13; apoplexy and heart disease, 12; diphtheria and violence, eight each. Aside from diphtheria, the causes are those with which sanitary administration can do little, but a word of caution as to unnecessary exposure, proper clothing and prompt attention to common colds may "help some" in averting pneumonia.

**Description of the Lorenz Operation.**—This bloodless method of reduction in the treatment of congenital dislocations at the hip may be described, briefly, as follows: The thigh is strongly abducted and the adductor muscles are torn from their attachment by chopping or sawing with the edge of the hand. This must be complete, as this group of muscles prevents the superabduction so necessary to keep the limb in place after it has once been reduced. After the muscles are torn through, the limb is stretched to pull the head down to the level of the acetabulum. When this is reached, the thigh is flexed and extended vertically upwards, at the same time making pressure behind upon the trochanter so as to force the head forward. Then, still keeping the hand or wedge beneath the trochanter, to act as a fulcrum, the leg is abducted and the head slips over the posterior rim of the acetabulum with a distinct snap. The head is now in the acetabulum, but has no tendency to stay there, and becomes redislocated as soon as one attempts to straighten the limb. To overcome this, the hip is reduced and redislocated several times, the joint is rotated and pressed in so as to bore out the acetabulum. In cases of greater difficulty, Lorenz attempts the reduction over the upper rim, which consists of making traction upon the thigh by means of a skein of yarn slung about the leg and pulled rhythmically by several assistants. The use of the screw for this purpose has been given

up on account of the danger of fracture. The leg must be rotated inward to guide it to the acetabulum, while countertraction is made by means of a perineal band. The physical signs accompanying a successful reduction are easily demonstrated and cannot be missed. The leg becomes as long as its normal companion; the hollow Scarpa's triangle becomes filled up, and the head can be palpated beneath the femoral muscles. The knee becomes flexed from shortening of the hamstring muscles. The snap, which is felt and heard at each reduction of the joint, can often be made out by observers several feet away. Upon redislocation all the above signs disappear. The second step in the operation is to turn to use what has been gained in reducing the head. As already mentioned, the head slips into the acetabulum only after extreme abduction combined with flexion and internal rotation has been attained. Any lessening of this extreme position allows the thigh to become redislocated. Therefore Lorenz fixes the limb by means of a plaster cast in this extreme position, and after the first few days of pain and restlessness pass away the flexed limb is fitted with a high shoe so as to enable the child to bear its weight upon it. In this manner the child is encouraged or rather forced to run about all day on this limb, so as to allow of the functional burdening of the head and acetabulum. This pressure soon digs out a new joint, which is easily demonstrable by means of the X-ray. Crutches are never to be used, for they defeat this purpose. After six months the cast is removed, the leg brought nearer to the horizontal and a new cast applied. Finally, after eight to twelve months, the cast is taken off altogether, and a high shoe is placed on the sound leg to preserve a small amount of abduction; this, with massage, electricity and gymnastics.

#### CANADA.

**A Medal for a Doctor.**—At the time of the fire at the Consumption Sanatorium at Ste. Agathe, near Montreal, Dr. John Ferguson of Montreal displayed conspicuous bravery in rescuing many of the patients. For this the Governors of the Royal Humane Society of Montreal will award the young doctor a medal.

**Attendance at McGill University.**—There are nearly 1,000 students attending the different faculties of McGill University, distributed as follows: Law, 39, a decrease of eight from the figures of last year; Arts, 298, of whom 180 are undergraduates; Applied Science, 280; Comparative Medicine, 16. In the Faculty of Medicine the attendance is in the neighborhood of 400. There are said to be 2,000 medical students attending the different medical colleges in Canada.

**Personals.**—Dr. W. M. Ford of McGill University, Rockefeller Fellow of Pathology, has been appointed to the staff of the Rockefeller Institute at Chicago. For the past year he has been prosecuting research work in Paris, France.

Dr. H. W. Thomas of Montreal has been appointed Fellow in Pathology at the Medical Department of McGill University. For the past three years he has been taking up a special course in comparative pathology in Germany.

**Dr. Charles O'Reilly Honored.**—Dr. Charles O'Reilly, Medical Superintendent of the Toronto General Hospital, has returned from attending the annual meeting of the medical superintendents of the hospitals of the United States and Canada. He was elected Vice-President, and owing to the absence of Dr. Duryea, the President, was called upon to preside at the meeting. It is expected that the associa-



tion will meet in the near future in Toronto, when, no doubt, Dr. O'Reilly will be elected President.

**Vaccination in Montreal.**—The new Vaccination Law recently adopted by the City Council of Montreal requires that vaccination shall not be performed by any person other than a duly qualified medical practitioner. It further stipulates in order to avoid any accidents following upon the operation that it be done aseptically. Any person or medical practitioner violating any of the provisions of the by-law shall for each offense be liable to a fine not exceeding \$40, and in default of payment thereof to imprisonment for a period not exceeding two calendar months.

**Toronto Free Consumption Hospital.**—Dr. E. J. Barrick is circulating a petition in Toronto which will ask the City Council to submit to the electorate at the coming municipal elections the question of granting aid to the proposed Free Hospital for Consumptives. In connection with this project a gentleman of Toronto has recently offered to donate \$25,000 towards the purpose of erection of the buildings. The National Sanitarium Association are appealing for funds to carry on the work of treating poor consumptives in their new hospital at Gravenhurst. In both hospitals in Muskoka there are now 150 patients.

**Toronto General Hospital Graduates.**—The graduating exercises of the Training School for Nurses in connection with the Toronto General Hospital were held last week, when eight nurses received their diplomas. The lady superintendent reported that since the Training-School was started in 1881, 355 graduates had left the school, 60 of whom now held positions of responsibility in other hospitals both in the United States and Canada. During the past year there were 658 applications. Dr. George A. Peters delivered the graduating address, while Dr. Charles O'Reilly, the Medical Superintendent, presented the diplomas.

**Providing for the Nurse's Fees.**—A recent decision has been given in Toronto by Judge Morson with regard to trained nurses collecting their fees. A Toronto gentleman engaged a professional nurse for the expected confinement of his wife, and told the nurse to hold herself in readiness on and after a certain date. One week after the expected time she was summoned to attend her patient. As payment for the week of waiting was refused the nurse entered suit. The question for decision was: Should a nurse when engaged for a fixed date be paid for the time of waiting after that date as well as for the time of service? The Judge said "Yes." The decision has given satisfaction to both physicians and nurses in Toronto.

**Toronto Clinical Society.**—The first meeting for the season of 1902-3 was held on the evening of Oct. 8, with the President, Dr. Edmund E. King, in the chair. Dr. King delivered the annual Presidential Address, taking for his subject the surgical treatment of prostatic affections. Dr. G. Silverthorn presented a young girl of eleven years, upon whom he had performed excision of the right shoulder-joint for myeloid sarcoma. Excellent results followed, the patient when shown to the Fellows having very fair command of the extremity. Dr. D. J. Gibb Wishart reported a successful case of nose building with paraffin. Dr. H. B. Anderson showed two pathological specimens. One was a traumatic rupture of the ileum sustained by a man in a scuffle. The rupture was situated about twelve inches from the ileocecal valve. Death resulted. The second one was a case of gonorrheal endocarditis. Dr. H. A. Bruce showed

double pus-tubes removed that day. He always leaves one ovary behind. Dr. F. Lem Grasset showed the sac of a femoral hernia.

**Religious Mania Amongst the Doukhobors.**—There are four settlements of Doukhobors in the Canadian Northwest having a population of nearly 7,500, amongst 1,500 of whom a religious mania has recently broken out. Some interesting details of this outbreak have appeared in one of the Canadian dailies, statements which in large part have been secured from Dr. Cash of Yorkton, Assa., who practices amongst these peculiar people. So great has the antipathy of the fanatics turned upon animals, their flesh and their products, that recently they turned all of their cattle adrift. The Dominion Immigration Department rounded these up and sold them at public auction, when some evidences from a few of the Doukhobors showed that they might be willing to return to their natural state, if they could only get their cattle back. The Government now holds some \$14,900 awaiting the disposal of the owners. So intensely had the mania seized upon the people that the women took the places of the horses and oxen at the plow and in the fields; and Dr. Cash relates how bonfires have been made of harness, boots, garments, etc. A crusade is to be shortly organized to consist of some 50 of these fanatics, who purpose converting to their views, the other Doukhobors, as well as the people of Canada and the United States.

#### GENERAL.

**Changes in the Medical Corps of the Navy, Week of Oct. 18.**—P. A. Surgeon T. D. Myers, retired, ordered to the Naval Hospital, Philadelphia, Pa.; Dr. J. L. Neilson, appointed Assistant Surgeon with the rank of Lieutenant; Asst. Surgeon H. A. Dunn, detached from Naval Hospital Yokohama, Japan, and ordered to Naval Station, Cavite, P. I.; P. A. Surgeon W. H. Bucher, detached from Panther and granted leave for one month; Dr. R. H. Michels, appointed assistant surgeon from October 11, 1902.

**Plague at Odessa.**—The Corporation of Odessa, says The Times's correspondent in that city, has agreed to assign 500,000 rubles (\$257,500) for increased hospital accommodation, etc., in connection with the plague, which is now officially recognized as epidemic. The authorities have agreed to keep the public informed in regard to the progress of the disease and the measures taken in the interests of public safety. The correspondent says the policy of secrecy pursued up to now has encouraged alarmist reports.

**What is Wrong with Our Education?**—No better summary of the dangers to society from illy educated, half-baked fanatics can be found than a recent editorial note in the Evening Post of this city, which we here give in full, showing that the public is slowly coming to regard certain matters in a more sensible light: "Diphtheria, Christian Science neglect" is the form of certificate of death issued by the Coroner at White Plains yesterday. The case was that of a child who died of malignant diphtheria without medical attendance other than that of prayer on the part of the "second reader" of a Christian Science Church, who said, when interviewed: "We heal through the power of God over the body through the mind, and I prayed for the little one's recovery." The mother of the child confirmed this statement, saying: "We don't have illness, but have claims and errors, and if we properly pray, and trust in God, we will recover." This is so much like the belief prevailing among the tribes in West Africa that we must think that we obtained it from them,



or they from us. A work just issued by the American Economic Association, entitled "The Negro in Africa and America," by Joseph Alexander Tillinghast, M.A., gives some facts tending to this conclusion:

"From the humbler medicine men found in every village, up to the completely organized and powerful priesthood of Dahomey, the functions of all are essentially alike, i. e., to cure diseases by driving out the evil spirit."

Du Chaillu, in his "Equatorial Africa," bears testimony thus:

"The Camma theory of disease is that Okambo (the devil) has got into the sick man. Now this devil is only to be driven out with noise, and accordingly they surround the sick man and beat drums and kettles close to his head; fire off guns close to his ears; sing, shout, and dance all they can. This lasts till the poor fellow dies or is better."

The theory is the same as that of the Christian science healers that the disease is a spiritual, not a physical malady. But how can an infant have a spiritual malady? How can a "claim" or an error be removed from the mind of a babe? It is to be hoped that the public authorities will make a test case of this White Plains homicide, and let us see whether society has any means for the protection of life superior to those prevailing in Dahomey.

**Obituary.**—Dr. Palmer Leete, eighty-two years old, died Monday last at the family homestead, in Branford, Conn. Leete's Island was named after him. Dr. Leete was one of the leading physicians in Southern Connecticut in his prime. Death was due to old age.

Dr. James D. Wade of Williamsburg died Sunday night while attending a patient. Dr. Wade was born in New York in 1838. When the War of the Rebellion broke out he joined the Forty-seventh Regiment. At the expiration of his three months' enlistment he joined the 176th New York Volunteers. He was afterwards assigned to the Nineteenth Army Corps of the Department of the Gulf and participated in several battles in Louisiana. He was made a captain in the Eighty-seventh United States Infantry, a colored regiment. He was captured by Confederates and put in prison, from where he and some of his companions escaped. They walked 160 miles through marshy land at night before they reached New Orleans. In 1864 Dr. Wade received his discharge.

**Deaths of Eminent Foreign Medical Men.**—The deaths of the following eminent foreign medical men are announced: Dr. F. Rubio, a well-known Spanish surgeon, at the age of seventy-five years.—Dr. Broes van Doert, an eminent Amsterdam dermatologist.—Dr. Albert Graefe, a well-known Berlin ophthalmologist, who was related to Albrecht von Graefe as well as to the late Alfred Graefe of Halle. He died in the Tyrol from pleuro-pneumonia, his age being only forty-two years.—Dr. Brunelle, Professor of Surgery in the Laval University, Montreal.—Dr. Alcina y Rancé, Professor of Therapeutics in the Cadiz Medical School.—Dr. Leo Kaplan, of the Herzberge Lunatic Asylum, whose numerous papers on the histology of nervous diseases are well known.—Dr. Josef Bergson of Berlin, at the age of eighty-nine years. He was one of the earlier writers on general anesthesia.—Dr. Karl Ewald Hasse of Hanover, at the age of ninety-two years, formerly Professor of Medicine in Göttingen. His published works include an autobiography written quite recently.—Dr. Friedewald, Professor of Ophthalmology, etc., in the College of Physicians and Surgeons, Baltimore.—Dr. Josef Unterlugauer, formerly Director of the Sanitary and Medical Services of Bosnia and the Herzegovina.—Dr. van Hasselt, formerly Inspector-General of the Medical Department of the Dutch army.—Dr. Switalski, privat docent of Midwifery in Warsaw.—*The Lancet.*

**SOCIETY PROCEEDINGS.**

#### MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

*Proceedings of the Twenty-Eighth Annual Meeting, Held at Kansas City, Mo., Oct. 15, 16 and 17, 1902.*

**Syphilis and the Body Politic.**—Dr. S. P. Collings of Hot Springs, Ark., gave his Presidential Address. His reasons for selecting this subject were, first, because of the importance of calling attention constantly to a disease so wide-spread as syphilis; secondly, because it was a disease which, with proper education concerning its frequent occurrence, together with its various modes of transmission, could be controlled more effectually than most diseases, and thirdly, because for the past 25 years he had been a daily observer of its frightful ravages upon the body politic and society at large. The history of syphilis was so closely interwoven with the history of the world that it was difficult to dissociate the one from the other. From the earliest records kept by the Chinese and Hindus down to those of the Greeks and Romans, a disease characterized by a primary sore, followed by constitutional symptoms, had existed. Anthropology had demonstrated that an affection was present among men in prehistoric times which produced lesions corresponding with those found to-day in tertiary syphilis, and in the inherited forms of this disease. Records showed that 4,526 years ago the Chinese knew of the duality of the chancre. They also knew that mercury was the antagonistic medicine. Syphilis existed among the Jews centuries before the birth of Christ, assuming such proportions at one time that Moses had 24,000 men who had contracted it summarily put to death. With the outbreak of the epidemic of the fifteenth century the disease seemed to have assumed a malignant form, the general characteristics of the affection becoming apparently more pronounced and malignant. The prevention of the spread of syphilis, in the author's opinion, by educating the public more thoroughly as it is being educated concerning the communicability and modes of transmission of tuberculosis, should be more vigorously advocated. The public, however, must first be willing to learn before it can be taught. Syphilis was communicated not only by some infected person, but also by articles which have come in contact with the specific poison, and kissing was a prolific source. Bulkley had shown that it could be conveyed by knives, forks, cups, pipes, cigars, chewing-gum and candy passed from one person to another. A new-born babe with inherited syphilis was extremely infectious to those about it. The history of this disease was intimately associated with the subject of prostitution.

At the present day the prohibition of prostitution was not practical. Regulation of the vice had proved ineffectual in controlling its spread. If it was legalized the men frequenting the houses should be subjected to the same rules in regard to examination that the unfortunate inmates were subjected to. In New York City there were in 1901 about 200,000 cases of syphilis, and Gihon a few years ago estimated that there were 2,000,000 cases in the United States. Syphilis was prolific of harm to humanity; its dire results were far-reaching; it was no respecter of persons, being as vicious in the palace as in the hovel, and physicians could do more by educating their patients as to the



modes of infection, and by advising with the younger ones among those whom they treat, than all the laws that had been or ever will be enacted could do to prevent the spread of syphilis.

#### PROCEEDINGS OF THE MEDICAL SECTION.

**Smallpox.**—Dr. John M. Batten of Downingtown, Pa., read a paper on this subject, in which he detailed the symptoms, and then discussed the diagnosis and prognosis, and emphasized the necessity of vaccination.

**An Attempt to Obtain Uniformly Active, Sterile, and Non-irritating Preparations of Digitalis for Subcutaneous and Internal Administration.**—Dr. E. M. Houghton of Detroit, Mich., referred to the unsatisfactory condition of our knowledge of the chemistry of digitalis, and stated that a sterile, non-irritating, and uniformly active preparation was greatly needed. He detailed his efforts to obtain such a preparation containing the largest possible amount of active constituents and the smallest amount of the inert constituents of the drug, based on pharmacological experiments on the lower animals. He gave the clinical results and conclusions arrived at.

**Some Developments in the Therapy of Iodoform.**—Dr. J. J. Gaines of Excelsior Springs, Mo., regarded iodoform as the best remedy for tuberculosis at the command of the physician. He spoke of it as an ideal iodide, storing all quantities of iodine, which could be easily liberated. He mentioned its use in pulmonary and gastro-intestinal diseases, and reported a number of cases in which he had used it with gratifying results.

**Normal Sleep Versus Drug Unconsciousness.**—Dr. J. B. Learned of Northampton, Mass., said that natural sleep was indispensable to long life and business success. Drug unconsciousness, labeled sleep, was the reverse. The indoor brain-worker failed to lay the foundation of normal sleep by day, and suffered from that failure by night. Brain and muscle employed in the open alone during the day would secure the normal conditions of sleep at night. Automatic brain-activity at the sleeping hour was the immediate cause of wakefulness. The ready remedy was muscular exertion under the direction of the will, either mild, without change of parts, or the reverse. Control of the respiratory and circulatory functions met the desired end by withdrawing power from the brain-centers. All automatic brain-work was suspended when concentrated attention was paid to alternate contraction and relaxation of certain groups of muscles. Automatic brain-work was pathological. Brain and muscle work, under the direction of the will, was physiological. The author detailed a method of inducing sleep.

**Treatment of Exophthalmic Goiter by Electricity.**—Dr. H. M. Beaver of Spring Hill, Kan., said that predisposition might act as a predisposing cause. The exciting cause might be a previous illness, injury, or overexertion. The exciting cause involved a determination of blood to the brain and medulla oblongata. This determination of blood acted as an irritant by pressing upon the nerve-centers, causing the incoordinate nerve action found in this disease. The symptoms referable to the heart, lungs, stomach, thyroid gland and eyes were nervous phenomena. The cardinal principle of treatment was to decrease the flow of blood to the head. When this was accomplished, all the minor symptoms would subside. The author reported three cases of the disease, and described the mode of application of electricity, also the battery used. He regarded exophthalmic goiter as a vasomotor paralysis; hence it was amenable to electrical treatment.

**Typhoid Fever: Its Antiseptic Treatment.**—Dr. James Billingslea of Baltimore, Md., reported 150 cases. He summarized the chief points in the disease. He said various antiseptics had been tried and vaunted. These were mentioned. Eliminative measures had been freely tried, and one of the most potent agents that the profession had to-day, Brand's method of cold bathing, owed its merits largely to its eliminative value. But even the undoubted value of Brand's method did not militate against the importance of an antiseptic plan, if an effective one was forthcoming. Such an antiseptic seemed to exist in the case of benzoyl-acetyl-peroxide, which came to the profession with the endorsement of Professors Freer and Novy, of Ann Arbor, Mich. Wasdin had recorded 24 cases treated with this new peroxide, with a speedy subsidence of fever, a small proportion of complications, and a material lessening of the duration of the disease. While the author had always been an advocate of conservative treatment, and had made it his aim to make haste slowly, seeing, as he did, a large number of typhoid cases, he gave this antiseptic a fair trial. During the past year he had treated in private and hospital practice 150 cases of typhoid fever with the proprietary preparation of this drug, acetozone, and the results had surpassed his expectations, not a single death having occurred. The special treatment consisted in dissolving 15 to 20 grains of acetozone powder—equal to  $7\frac{1}{2}$  or 10 grains of the benzoyl-acetyl-peroxide—in a quart of water, and giving the patient this amount to drink in the 24 hours, both in water and in milk, diluting the milk to one part of acetozone solution to three parts of milk. The action of the drug would be materially aided by administering a mild saline laxative, say sodium phosphate or magnesium sulphate, every other day.

Dr. H. J. Stewart, of Chicago, Ill., had treated 16 cases of typhoid during the recent epidemic in Chicago, and of this number there were two patients who could not take acetozone, but whether it was due to an idiosyncrasy on part of the patient he did not know.

Dr. Wm. Britt Burns of Memphis, Tenn., cited the case of a girl, aged 10, which illustrated the air-borne mode of infection.

Dr. William A. Campbell of Colorado Springs, Colo., contended that when patients became very hungry for food the physician should try and find out what articles of food would best agree with them. This was the plan he pursued in treating typhoid cases. He did not regard milk as a dangerous food in typhoid fever cases.

#### SYMPOSIUM ON TUBERCULOSIS.

**What Class of Pulmonary Cases Do Well in Colorado?**—Dr. W. A. Campbell of Colorado Springs, after speaking of the prevalence of tuberculosis and the frequency of unrecognized and cured cases as shown by autopsies, gave an analysis of 250 cases coming under his observation, in which his examinations were made soon after their arrival in Colorado. He found in this series of cases that the average age was twenty-nine and four-fifths years. Sex or social station made no difference in physical condition or result. Twenty-nine states and five foreign countries furnished the cases. Those with tubercular family history did not do as well as the non-tubercular. The percentage of benefited decreased as the duration of the disease increased. The right lung was involved alone oftener than the left. The percentage of benefited was slightly in favor of the right lung. Where both lungs were involved the mortality was 50 per cent. In the first stage cases 92 per cent. were benefited; in the second stage, 54 per cent.; in the third stage, 13 per cent. Hemorrhage oc-



curing in the first stage of the disease was no contra-indication to residence in high altitude. The diminished arterial tension and dilatation of external capillaries due to lessened atmospheric pressure made it safe for hemorrhagic cases to seek a higher altitude. He would not send cases of acute miliary tuberculosis or phthisis florida to high altitudes. Neither would he send those extremely nervous, with an irregular or rapid heart and high temperature. Cases well advanced, with rapidly breaking-down lung, should not come. Those having cardiac dilatation or acute endo- or myocarditis should not come. Cardiac murmurs were no contra-indication if compensation had taken place. Those having Bright's disease should not come. Advanced laryngeal or intestinal cases did not do well. He would have patients come with sufficient money to support themselves on good food until acclimated and improvement was well advanced. In conclusion, he cited the high percentage of benefited in the first stage, and made an appeal for the early detection and early protection of the tubercular subject.

**Climatic and Electric Peculiarities of Colorado Favoring Recovery in Pulmonary and Intestinal Diseases and from Surgical Operations.**—Dr. J. E. MacNeill of Denver, Colo., discussed the physical characteristics of Colorado affecting its climate, the mineral springs of Colorado, and cited some generally accepted facts regarding mountain climates applicable to the State. He also discussed the value of high altitudes with their rarified air and direct sunlight in the treatment of abnormal conditions, and finally the electric conditions.

**Digestive Disorders in Consumption, with Notes on Mixed Infections.**—Dr. Paul Paquin of Asheville, N. C., regarded consumption as a mixed infection and the plague of civilization. The majority escaped this disease not because they were not attacked, but because they resisted the attack. Here was a problem of protection. A condition that would prevent the germs of consumption from developing in the system, and if they did get a start in growth, a condition that would stop them. The digestive apparatus was the system on which the vital energy chiefly depended. If it did not carry on its functions with sufficient effectiveness and persistency, life was a nightmare, and when an individual was sick, recovery was a serious problem. So with respect to consumption, the most vital question was that of nourishment, whereon one might base such measures of treatment as were deemed best for restoration. Without nourishment of a sufficient kind in quantity and quality, nothing would avail in therapeutics. Tuberculosis could not be arrested without the assimilation of sufficient and proper food. Bearing in mind the pathology of the gastro-intestinal affections accompanying consumption, a normal condition of the mucosa must be restored before good digestion can take place. Among the local measures to this end were stomach and high intestinal lavage. He had known patients who were declining steadily from the ravages of consumption and dyspepsia to gain from two to four pounds a week after the beginning of weekly or semiweekly lavage of the stomach alone. As specific measures, serotherapy, the cacodylates and iodine offered the greatest aid in preventing organic changes. Immunizing anti-tubercle serum was effective, because it was antagonistic to the tubercle toxins, which were in a large measure responsible for such lesions. Mixed infections in tuberculosis offered the greatest complexity in the dyspepsia accompanying them. He thought it was due to the effect of a combination of the numerous kinds of germ-poisons produced in such cases both in the lungs and alimentary canal.

**Tuberculosis and the Ultra-violet Ray.**—Dr. Albert E. Sterne of Indianapolis, Ind., spoke of the division of the sun's rays, dwelling particularly upon the actinic or chemical rays of light, and the identity of those emitted from the voltaic arc with those of the solar planet. From this he had elaborated a method of treatment for which it was claimed that most excellent results had been attained, both in a general and local manner. The nude body was exposed to intense light from powerful voltaic arcs, and in addition free ozone was developed from a special ozonating apparatus. In local applications only one pole was used, and this was connected with vacuum tubes devised for different portions of the body to be treated. Dr. Sterne claimed most excellent results in almost all conditions of debility, notably in neurasthenia, and in the primary stages of tuberculosis. His conclusions are: (1) Actinic rays are chemical in their quality, but of small caloric value; (2) they exist mainly in the ultra-violet zone of the spectrum; (3) actinic rays derived from high-power electric lights are similar or identical to those of solar origin; (4) their use is as rational as sunlight itself; (5) their value lies in their decomposing but at the same time reconstructive molecular action upon the body tissues, mainly the blood-elements; (6) their activity is enhanced by the generation of ozone in free and nascent form; (7) their ultimate effect is one of oxidation, and consequently they increase the metabolic changes, thereby augmenting the natural processes of regeneration within the system; (8) their germicidal action is especially pronounced on account of the fact that germs can exist in the presence of free or nascent oxygen in either bi- or tri-atomic form.

**Sanatorium Treatment of Pulmonary Tuberculosis at Home.**—Dr. Robert H. Babcock of Chicago divided the sanatorium treatment into four classes: Pure air, nourishment or forced feeding, hydrotherapy, and a strict régime or control of the patient's daily life. The open-air treatment was obtained by the patient being exposed on a balcony or in properly constructed shutters where he was protected from cold winds and elements and kept in the open air, sometimes even when the temperature was as low as 13° F. below zero. Among the conditions which indicated rest in the open air were progressive loss of weight and cardiac asthenia. When patients had passed out of the stage in which these conditions existed and were convalescing, then exercise was permitted, the exercise being carefully determined by the medical attendant. The nourishment of the patient was not only carefully selected with reference to a proper proportion of proteids, which should be large, but also included the proper amount of carbohydrates. Milk, raw eggs, meat and its varieties, poultry and fish, etc., were the articles on which reliance was chiefly placed. Hydrotherapy played an important part in the treatment. Hydrotherapy was applied for the purpose of stimulating nutrition, toning up the circulatory system, and overcoming the hypersensitiveness of the skin which existed in so many tuberculous patients. As to the control of the patient, a very important element in treatment, every patient should be controlled from the time he got up in the morning until he went to bed, and this was done by the supervision of a skilful medical attendant and nurses. The temperature was carefully recorded, and even the recreations in which patients indulged were selected by the medical attendants with a view to the prevention of excitement, for to many of these patients even mental emotion was deleterious. Speaking of the home treatment of tuberculosis, Dr. Babcock detailed it at considerable length, saying that the majority of medical practitioners were not fully alive to the importance and



value of this treatment, and were not properly instructed in the details or method.

**Tent-life in the Treatment of Tuberculosis.**—Dr. A. Mansfield Holmes of Denver, Colo., said that pure air and sunshine were two important factors in effecting a cure of tuberculosis. Tent-life was the most important means of securing the advantages of these factors. The author called attention to the essentials of an ideal tent-cottage, and gave rules for governing tent-life. Those who had had no experience with tent-life invariably entertained an exaggerated idea of its dangers and inconveniences. A short experience soon dispelled this fear, and patients were with difficulty induced to return to an indoor life. Extended experience with tent-life in Colorado justified him in making the following deductions: It increased the appetite; improved nutrition; diminished cough; night-sweats ceased; sleep was improved; weight increased; fever decreased, and the tendency to take cold was diminished. A model of the tent-cottage adopted by the Rocky Mountain Industrial Sanatorium was exhibited, showing improved methods of construction and ventilation.

**How Not to Be Nervous.**—Dr. Hugh T. Patrick of Chicago selected this subject for his address in medicine. He said that the initiative of all therapeutics should be prophylaxis. Prevention was paramount to cure. The first and most effective preventive of nervousness was a reasonably long line of first-rate forbears. In order to present a specific illustration of the force of inheritance in the genesis of functional nervous affection, he had tabulated from his office records 100 consecutive cases which might be included under the general term nervousness, and he found that in 70 per cent. of them a neurotic heredity had been in evidence. While a bad heredity was the most frequent and most potent factor in the production of nervousness, knowledge of this fact should not lead the profession into apathetic resignation, but rather make it face the difficulty with wise determination. Next to the omnipresent, inevitable laws of inheritance, came the never-ceasing formative power of environment. Reaction to extraneous influences began at birth, and ceased only with the extinction of life, but childhood and youth were the plastic stages.

For preventing nervousness in the child or removing that already present, he thought that there was nothing so effective as the toughening of the body and mind. A child who was made to have tough muscles, strong lungs and a vigorous digestion; who could stand changes of temperature and endure pain, was already a long way from nervousness. More important still was toughness of psychic fiber. The child who could support disappointment, who could be crossed without a tantrum, and who habitually obeyed was building a bulwark against nerves; and the child who was not easily frightened, had self-control and a budding courage had nipped half a dozen neuroses in the bud. But to procure this toughness a certain exposure to bodily discomfort and mental hardship was necessary.

The author discussed at length the prophylaxis of the neuroses in children, and then passed on to the consideration of adult life. He said a deal of nervousness was caused or helped along by misdirected energy, misplaced worry, longing for baubles, the fighting of phantoms, etc. To recognize the important things in life was one of the most difficult tasks of judgment that came to the individual. To sum it all up, the author said: "If you wish never to be nervous, live with reason; have a purpose in life and work for it; play joyously; strive for the unattainable, never regret the unalterable; be not annoyed by trifles; aim to attain neither great

knowledge nor great riches, but unlimited common sense; be not self-centered, but love the good, and thy neighbor as thyself."

**Neurasthenia.**—Dr. George F. Butler of Alma, Mich., said that neurasthenia was the expression of nerve-tire of the central nervous system and its consequences. Nerve-tire of the central nervous system implied acceleration of the action of the excitomotor ganglia of the organ, first with increased functioning of these organs, and secondly with exhaustion and its consequences. In this way central nerve-tire, finding expression along the line of least resistance, produced local organ expressions which were claimed as the cause of the constitutional condition. From these local expressions a vicious circle often resulted which aggravated the original condition. As overaction of the organs implied underelimination, autotoxemia of a very poisonous type, like all products of nerve-waste, necessarily followed nerve-tire. From this, renal and hepatic disturbance was added to the clinical picture and intensified its blackness. Neurasthenia might occur alone, or might be an expression and complication of any constitutional disorder. In such case both the nerve-tire and the constitutional disorder required treatment. The neurasthenia resultant on phthisis, nephritis, diabetes and syphilis was a true neurasthenia which, if not treated, intensified the disorder which gave it birth. The treatment of neurasthenia consisted in the relief of the nerve-tire and conditions underlying it through proper diet, hydrotherapy, balneotherapy, relief of insomnia and removal from an etiological environment. Neurasthenia untreated might produce degenerate offspring, especially if the patient be a woman.

**Criminal Responsibility of the Epileptic.**—Dr. John Puntton of Kansas City, Mo., gave a brief summary of historical data defining the line of demarcation between empiricism on the one hand and scientific knowledge on the other in reference to the study of epilepsy. A modern conception of epilepsy was based upon the science of cerebral localization. He drew the following deductions: (1) That epilepsy is a symptom of some brain-disease; (2) that its continual presence tends towards mental deterioration; (3) that the mental responsibility of the epileptic depends upon the extent to which mind or self-control has been impaired by the epilepsy; (4) that the legal test of insanity is not sufficient, as mental irresponsibility is not incompatible with a knowledge of right from wrong; (5) that epileptics are to some degree, at least, responsible for criminal acts, more especially when the epilepsy is produced by their own default; (6) that criminal acts of epileptics appeal to medicine rather than law for their proper adjudication; (7) that in all cases of murder where epilepsy is proven the law should be amended to allow of life-commitment to an insane asylum rather than to a penitentiary; (8) that the mental responsibility of the epileptic in case of murder should be referred to a medical commission, appointed by the court, which again may be referred to local or county medical societies to name its members.

**Sudden Atrophic Influence of Craniospinal Nerves.**—Dr. F. E. Coulter of Omaha, Neb., reported a case and described the areas involved. He also presented a report of normal and abnormal productions, mentioned the possible etiological factors in the case, citing other cases, and declaring that under certain conditions craniospinal nerves may exercise a sudden atrophic influence on the skin and the appendages thereof. That the results in the case reported were due to a disturbance of this nature he thought he was warranted in concluding for the following reasons: (1) All the hair was normal before the attack, but



within three days after the attack it all disappeared from the areas described; (2) the character of the new hair was such as would be the natural product of a faulty nutrition, and whether due to the production of a toxin or the sudden diminution of the normal elements it was difficult to decide, though it was known that the abnormal hair was smaller in size, length and diameter, and markedly deficient in pigment substance; (3) the fact that this was a bilateral lesion would naturally indicate that one was dealing with a blood-condition, possibly a toxin formed by the very sudden and severe convulsive state and manifesting itself on this particular nerve-trunk because of some histological character in its composition that we as yet were unable to detect; (4) that in this particular case we did not have an example of that strange, yet interesting, condition of change in color, a decolorization of the hair seen after a very great fright or severe mental anguish, which in a short time changes the color of the hair completely, but instead a definite nutritive alteration, acute in character.

**Hebephrenia or Childhood Insanities.**—Dr. W. B. Fletcher of Indianapolis, Ind., spoke of the causes, character, prevention and treatment of the various forms of insanity incident to children prior to and during the period of puberty. The writer had observed 300 cases of hebephrenia in the city in which he lived. He cited some interesting cases.

**Sympathetic Eye Diseases.**—Dr. James Moores Ball of St. Louis, Mo., made a clinical division into sympathetic irritation and sympathetic ophthalmitis. He discussed the diagnosis, symptoms, etiology, prognosis and treatment of sympathetic irritation. Speaking of sympathetic ophthalmitis, he said it was one of the most formidable and obscure of ocular affections. Only uveal inflammation which was caused by bacterial infection could produce this disease. He mentioned the date of appearance, frequency, symptoms, and divided the affection into uveitis serosa and sympathetic fibrinous uveitis, saying that the former was relatively mild, while the latter was a malignant affection. Sympathetic papilloretinitis, which rarely was the sole manifestation of sympathetic ophthalmitis, was likewise discussed. Other sympathetic affections had been described without gaining recognition from ophthalmic authorities. He spoke at length on the prognosis of sympathetic affections, and then passed on to a consideration of the pathology and pathogenesis of sympathetic ophthalmitis, discussing the prophylaxis and treatment of these diseases.

**Toxic Amblyopia.**—Dr. J. W. Sherer of Kansas City, Mo., presented a clinical report of five cases of toxic amblyopia from methyl alcohol that had been seen by him. In all a degree of blindness rapidly followed drinking the poison. The eyes appeared normal externally, with pupils slightly dilated. The media were clear. There were no hemorrhages. Early there were no fundal signs, but later atrophy was visible. The fields were contracted and showed absolute central scotomata. One case was complicated by some involvement of the peripheral nerves of the lower limbs. The pupillary reaction corresponded to the description of Lauder-Brunton, who found it to be the reverse of the Argyll-Robertson reaction. Pathologically the condition was that of peripheral neuritis affecting the optic nerves or retrobulbar optic neuritis. Much work had been done by different observers to demonstrate experimentally the minute changes. Degeneration of the ganglion-cells and macular layers of the retina occurred. This was partly due to vasoconstriction and diminished blood-supply, and partly to the action of the poison. Consecutively the nerve fibers degenerated. In the experi-

ments with quinine there was synchronously with the onset of the amblyopia chromolysis of the retinal cells, edema of the pericellular spaces and wasting of the ganglion-cells. In filicic neuritis it was found that all the nerve-fibers had melted away by the fourth day. Undoubtedly, the primary effect was on the fibers, but the cells were probably simultaneously attacked. There was an analogy between the retrobulbar neuritis of tobacco and alcohol and filicic neuritis, both being an acute parenchymatous neuritis.

**Diseases Preceding and Following the Use of Alcohol and Opium.**—Dr. T. D. Crothers of Hartford, Conn., said that he regarded the use of alcohol as one of the most subtle and serious causes of disease. Clinical study pointed out many distinct lines of disease which preceded inebriety, of which syphilis, trauma, dementia and toxic states were most common. Neurasthenic conditions and tubercular diatheses preceded the use of spirits. Atrophic and hypertrophic sclerosis always followed the use of spirits. An early recognition of the organic changes which preceded and emerged into inebriety would enable one to practically prevent the disease.

**Treatment of Typhoid Fever with Castor Oil.**—Dr. C. C. Bass of Columbia, Miss., reported 32 cases of this disease treated with castor oil, and except in a very few of these cases in which he gave some other medicine to meet some special symptom he gave nothing else than castor oil. Thirteen cases were treated with one dose every 24 hours, and 19 cases with a dose every 12 hours. The results following the treatment were very gratifying. He commended this treatment as worthy of further investigation.

**Croupous Pneumonia.**—Dr. Wm. T. English of Pittsburg, Pa., discussed some of the signs and symptoms of this affection. He also dwelt at length upon the easiest and best methods of speedily and certainly determining them. He mentioned the application of remedies suitable to the case and stage of the malady; the advantage of grouping some phenomena in securing a speedy diagnosis, and the necessity for observing all signs and symptoms in differentiating diseases with similar manifestations.

**Pneumonia.**—Dr. Wm. F. Barclay of Pittsburg considered the clinical history of pneumonitis; the close relationship between pneumonia and la grippe; the similarity in pathology, initial stages, clinical history, mortality and treatment. The exciting causes of pneumonia and la grippe were identical. The history, duration and progress of these diseases differed but little. The two diseases frequently coexisted in the same individual. The affections differed in the structures of the organs affected. He believed a rational treatment was based on a study of the immediate causes of death in pneumonia, as concluded in a large number of death-reports in the city of Pittsburg. Heart-failure and exhaustion stood out as the immediate cause of death in 98 per cent. of all reported deaths in a circumscribed area of almost 1,000,000 people. He had learned from experience that a most decided course of medication was indicated in the treatment of pneumonia, and that a like course of treatment in cases of la grippe robbed the disease of its terrors. First in importance was rest in bed in well-ventilated rooms, with requisite protection from atmospheric influences; secondly, a thorough cathartic of calomel was essential in bringing about a decisive derivative action of the secretions of the body. Five to ten grains of calomel, with 30 to 60 grains of milk-sugar was a formula that had never disappointed him in its beneficial effect. The action of nux vomica, when properly administered, never failed in its power to alleviate the symptoms and afford relief. Tincture of



aux vomica should be given in large and frequent doses, well diluted in water.

**Treatment of Chronic Dysentery.**—Dr. John L. Jelks of Memphis, Tenn., said that the disease was considered of microbic origin, although a specific organism had not received general acceptance as the sole causal factor. This was the basis of all treatment. No matter what the classification of the disease, the same general idea as to treatment must obtain; namely, the destruction of the micro-organism, drainage, cleanliness, rest and restoration of the tissues. An erroneous idea had prevailed that the disease was beyond reach of any possible topical medication, further than perhaps the use of the Wales metal bougie, which was not always a safe procedure. The sigmoidoscope and long rubber tube had a field in the treatment of this affection, and it was necessary to educate the profession as to the possibilities of this method. The patients should be placed in sanitary surroundings, free from unnecessary heat and moisture. The diet should be carefully selected. The stomach should receive careful attention. The portal engorgement should be relieved, and the intestinal tract thoroughly cleansed. Hemorrhage from the bowel, when profuse, could be controlled by styptic enemata given through the double tube. In using the sigmoidoscope the author recommended the knee-chest position. The bowel should be thoroughly cleansed through this instrument with antiseptic washes applied very hot. If there was much excoriation or ulceration nitrate of silver might be applied to bleeding and eroded surfaces with a cotton probang, or in the form of a spray. Higher treatment may be administered through one or two tubes of soft rubber, which can be passed further into the colon, and the antiseptic solution administered by enema through these. If necessary, boracic acid, iodoform, or aristol may be insufflated through the sigmoidoscope and the bowel thus thoroughly covered. In the chronic state he had found most benefit from iodoform and ichthylol made into suppositories and passed through the sigmoidoscope into the sigmoid. This was especially indicated in tubercular conditions, but had its use in any form of proctosigmoiditis or colitis. All toxic drugs must be used with caution.

(To be continued.)

## THE NEW YORK ACADEMY OF MEDICINE.

### SECTION ON GENITO-URINARY SURGERY.

*Stated Meeting, Held October 15, 1902.*

John Van der Poel, M.D., in the Chair.

**Urine Separator (Diviseur Vésical Gradué) of Dr. F. Cathelin, of Paris.**—Dr. John Van der Poel presented this instrument, which had been demonstrated to him by Dr. Cathelin, and he had used it himself with good results. It was simple in construction, and could be used by most operators, requiring but little technical knowledge beyond knowing how to irrigate a bladder and pass a lithotrite. The shape is that of a lithotrite, corresponding to No. 25 of the French scale. In the center of the shaft is a flat piston, at the distal end of which, when in situ, is attached a thin rubber membrane, stretched upon a fine wire, forming an ellipse. This is pointed at its proximal extremity, where it fits into and divides the posterior urethra, and rounded at its outer end, where it approximates the posterior and upper walls of the bladder. It is about nine cm. in length by six cm. in width, its shape naturally being determined somewhat by the conformation of the bladder, which it however does not alter, the bladder on the contrary, fitting more about it. On

the sides of the instrument are two small canals running throughout its entire length down to the point where its urethral curve begins. Into this are passed two small catheters, corresponding in size to the ordinary ureteral catheter, and which, when in position, point downward and outward into the deepest part of the bladder, collect the urine as it is excreted, and carry it out to separate glasses or tubes arranged for the purpose. The entire instrument, with the exception of the catheters, can be sterilized by boiling, and the catheters by the formaldehyd vapor.

The procedure is as follows: After sterilization, the catheters are passed through their canals, are tested by injecting through them a small amount of (sterile) water, and then withdrawn sufficiently to bring the eye back into the canal of the instrument. The membrane, or more properly the diaphragm is then attached to the distal end of the piston, by fitting into a slot, where it is made secure by a small tack or projection, held in place by means of a spring. The diaphragm is then oiled (lubrichondrin being preferable) and withdrawn into the shaft of the instrument by withdrawing the piston, until the figure "O" appears on the withdrawn piston, at the same time keeping the index-finger of the left hand at the point where it passes into the shaft to protect its edge from being rubbed by the edge of the opening, the figure "O" indicating (when in the bladder) that it (the diaphragm) is entirely within the shaft.

The patient's position is the dorsal one, with head only slightly elevated, knees flexed and thighs separated, as usual, with sufficient room in front to allow the "stand" and "support" (consisting of the metal box-cover and a sliding rod and grip or "lyre," moved and fixed at any height to accommodate male or female examination) to be placed. The bladder preparation is the same as for a cystoscopy, i. e. irrigation, until the return fluid is clear. A knowledge of the bladder-capacity is necessary to determine the degree to which the diaphragm shall be introduced into the bladder—not the greatest capacity, but the point at which the patient experiences the first desire to micturate, the degree to which it is introduced being determined and controlled by a scale on the piston.

As a large number of the patients in whom we are desirous of differentiating the urines have but a small bladder-capacity, it is evident that an instrument which can be used in a very contracted bladder for this purpose is a valuable addition to the means which we have at our disposal for establishing or proving a diagnosis. Dr. Cathelin has successfully employed it in a bladder of but 18 grams capacity, where it rested in situ for 14 minutes.

After washing the bladder and determining its capacity, 10 c.c. of fluid should be injected and left, in order to obtain siphonage. The instrument is then introduced, and the catheters protruded, the beak being drawn back so that it fits snugly against the symphysis pubis, which brings the opening where the diaphragm is to protrude, into the posterior urethra. The diaphragm is now protruded, according to bladder-capacity, its proximal or urethral end fitting into and dividing the posterior urethra into lateral halves, exactly as the rest of it divides the bladder proper into two lateral chambers, thereby making the separating wall complete, at least throughout the inferior surface of the bladder, and thus preventing mixing of the two urines.

The sittings should not require over 25 minutes at the outside, the first eight or ten minutes being allowed to "balance" the working of the instrument and empty the bladder of the fluid left behind to start the flow. The separate urines are then collected in glasses or tubes specially constructed, to which is attached a scale



to determine the amounts drawn off. To release the instrument, first withdraw the catheters and then the diaphragm into the shaft, and remove as one would a sound or lithotrite.

The disturbance to the bladder-wall is practically nil, and there is no pushing of it upwards, as in the Harris-Downes instrument. Naturally where there is vesical hematuria, it would be useless to employ any separator, and ureteral catheterization would come into play if it were necessary to go beyond the bladder.

Dr. Chas. L. Gibson said he was sorry that he did not bring the segregator of Dr. Luys. He believed it to be a simpler instrument than the one presented, shaped like a lithotrite, with a diaphragm operated by a screw at the handle, and a rubber bridge, which alone forms the division of the bladder. It can be worked only in an empty bladder. There are no catheters attached and the bladder-urine flows directly into the openings on either side of the diaphragm. From that standpoint he thought it was superior to this instrument although the one presented seemed more effectual. It did not exclude bladder-contamination which was a point quite fatal in all these instruments. It might be wisest to employ all of them a control by injecting on one side some methyl-blue, to ascertain if there is leakage on the other side.

**Specimen of Vesical Calculus.**—Dr. George K. Swinburne said he had a case last summer that presented some features of interest. A calculus, rather soft, was removed by litholapaxy. The method by which he discovered that the patient had a calculus he thought might be of interest to the section. The patient had frequency in urination, the urine was cloudy, there was pain at the end of urination, and no venereal history was given. At the clinic he had so many patients with prostatic trouble presenting similar symptoms that he thought that possibly prostatic trouble might exist in this instance. Examination by the rectum revealed a condition which exactly resembled an enlarged prostate, but pressure with the finger seemed to cause one-half the prostate to disappear. It seemed to him as if a calculus was wedged behind the prostate when the bladder emptied itself, and to the finger its rectal surface was continuous with that of the prostate. A searcher introduced into the bladder at once revealed a stone. This patient had only been in this country about two months and he had had the pain about six months. Another feature of interest in this case was the question whether litholapaxy or a cutting operation was better. At first he believed that the stone might be contained in a cavity behind the prostate, but when fluid was introduced into the bladder for cystoscopic examination the stone was shown resting on a perfectly flat surface, and it seemed to him a clear case for the operation of litholapaxy. The operation was done in a tenement-house, on the ground floor, in a dark room, and under the influence of chloroform. After introducing the lithotrite and catching the stone between the jaws there followed a sensation exactly like that when the stone slips from the grasp of the instrument. Again he caught the stone, and thought he had caught a smaller end of it, and on closing the jaws thought it had again slipped. The third attempt was followed by a similar result, and then he could not find the stone. After ineffectual search for the stone, the evacuator, when introduced, brought away all the fragments. The stone had been crushed by three movements of the lithotrite. Such an experience had never occurred to him before. Of course it was due to the softness of the stone. The operation was performed last August, and the patient is in good condition today.

The sensation described of pressing the calculus into the cavity of the bladder from where it seemed wedged behind the prostate was verified four days in succession. It occurred when the bladder was empty, and made him think it had formed a pocket for itself behind the prostate. The cystoscope, however, showed no sacculation whatever.

**A Case of Rectal Gonorrhea.**—Dr. Frederic Griffith presented the history of the result of pederastic acts upon the part of a patient, and it gave a glimpse of a form of male prostitution as carried out in this city, and showed furthermore the precautions which seemed necessary, as had been shown in the recitals of Kraft Ebing, and which were taken in this case to prevent blackmailing of those who participate in this form of sexual indulgence. J. M., a male twenty years old, a driver by occupation, had always been healthy and possessed a well-formed body. Said he had indulged in sexual intercourse very frequently. He came for treatment for a violent, creamy, yellow discharge from his penis which had lasted three days. His statement of the source of his trouble was that seven nights before, while lounging on a corner, he was approached by an affable stranger who invited him to visit a saloon. While not in the habit of indulging in intoxicants, he accompanied his new-found friend and partook of a glass of beer. Entering into conversation, he was invited and accepted an invitation to take a trip to Philadelphia. Although himself without money, his new friend appeared to have plenty of means. The pair journeyed to Philadelphia, and late the same evening secured a room at an expensive hotel, and the end of the proceeding was that M. had intercourse per rectum three separate times during the remaining hours of the night. The two returned to this city early the next day where M.'s friend, before losing himself in the crowd, gave him \$5. M. described his erstwhile friend from his build and by his actions as being a "sissy." He had noted also that during penetration the man's buttocks were wet, and that his anus was patulous. M.'s subsequent symptoms were those of a typical gonorrhea, with the demonstration of gonococci.

**Calculus in the Kidney.**—Dr. Ramon Gutierrez reported the case of a laborer twenty-nine years old, who was brought to the hospital suffering from a pain in the right side, which he said had existed for several weeks. Examination showed a cachectic individual, thin, emaciated, with a slightly flexed thigh upon the abdomen. In the right lumbar region was found a mass filling the entire ilio-costal space behind and extending well over towards the median line in front. This was ill-defined, having no distinct contour, such as there would have been in the case of a large kidney, and it was indurated to the touch. No fluctuation could be felt. The urine was of a specific gravity of 1.026, high-colored, thick, containing a slight trace of albumin and a large amount of pus, few blood-cells, bladder and renal epithelia, granular epithelial and pus casts and uric-acid crystals. The patient's condition was very bad. His pulse was 130, temperature 102, and respiration 28. He was brought to the operating-table, was quickly anesthetized, and a lumbar incision was made. This was followed by a gush of pus estimated at between one and two pints. The finger inserted into the pus-cavity found a large space in the loin not extending to the pelvis or above the abdominal cavity. The kidney could be felt somewhat enlarged, sclerosed, and in the posterior aspect a hole was found in which the inserted finger felt a sharp foreign body, which was loosened and removed. This proved to be a calculus an inch and a quarter long and one-half an inch in width. The wound was quickly packed, the incisions made smaller by two ligatures



through the abdominal wall above, the drain coming out below. The patient was discharged from the hospital, but returned one month later in a condition worse than before, with his leg and thigh more flexed. He hobbled to his bed with his hand resting on his thigh for support, and his body bent towards the thigh. The wound was still closed, there was a tumor in the iliac region, and there seemed to be deep-seated swelling in the front of the thigh, extending down midway to the knee. The patient was again anesthetized and the old wound opened, from which pus escaped. A counter-opening was made in the iliac region, which communicated with the lumbar opening. Another opening was made in the anterior part of the thigh, midway to the knee, and more pus was evacuated. Drains were inserted from the lower to the iliac region, and from the iliac to the lumbar. The kidney was densely bound down by adhesions, and it was thought better to wait to see the result of the operation before attempting a nephrectomy. The lower sinuses closed, only one remaining in the lumbar region. The patient left the hospital to recuperate during the summer, and we were to notify him when to come in for a nephrectomy. He now cannot be found.

**A New Method of Finding the Urethra in External Urethrotomy.**—Dr. Chas. L. Gibson read this paper. The modification of the operative technic was intended to give an immediate and certain entrance to the deep urethra in strictures not permitting the introduction of the ordinary guide. As the result of repeated trial upon the cadaver he found that sharp traction on the prostate downward and somewhat backward will make taut the deep urethra to a degree that makes its recognition unmistakable. With the patient in the lithotomy-position, the rectum is thoroughly washed out, a rectal speculum introduced, and the prostate transfixed laterally from the rectum by a large, sharp hook. A median perineal section is then performed. The left forefinger is introduced into the wound, and as an assistant tugs gently on the hook one readily receives the sensation of transmitted tension of the urethra. The surgeon then directs the bistoury into that portion of the deep urethra which has been made prominent, the probe-pointed director readily glides into the lumen of the urethra, and following it the small metal catheter will demonstrate the successful entrance into the bladder.

Dr. Howard Lilienthal said that although he had had considerable experience in genito-urinary work he could not quite agree with Dr. Gibson when he stated that the operation of perineal urethrotomy without a guide was a simple one. Whenever it is necessary to perform the operation without a guide he felt the responsibility keenly. He thought that any improvement in the technic which would render the operation more certain and especially more rapid was to be desired. A great many lives had been lost due to the long persistence of surgeons in trying to get through the perineum without a guide. In fact, he had lately never hesitated when the patient's condition was poor to perform retrocatheterization through a suprapubic cystotomy. He thought Dr. Gibson's method was an excellent one in that it prevented the making of another wound. Infection of the prostate by a hook through the rectum he did not believe was likely to occur; puncture of the prostate through the rectum rarely caused suppuration. He said he would like to ask, however, if some method could not be devised of operating through the perineum or perineal wound, instead of going through the rectum. If a wide perineal opening be made until we could feel the prostate through it, this certainly should seem feasible, and would not involve the possibility of infection

through the rectum. We owe Dr. Gibson thanks, he said, for calling our attention to this simple method of procedure.

Dr. James Pedersen thought that Dr. Gibson deserved great credit not only for the novelty of his method, but also for having proven its value, both upon the cadaver and upon operative cases. With regard to the suggestion made by Dr. Lilienthal that traction on the prostate be made through the perineal opening instead of by way of the rectum, it occurred to him that one of the prime objects of Dr. Gibson's method, rapidity, would be defeated by the time necessary to dissect down upon the prostate.

Dr. Chas. L. Gibson said that in the ordinary urethrotomy through a vertico-median section he had also attempted to produce traction upon the prostate, but never with satisfactory results, never approaching in effectiveness the other method. One must get a good purchase upon the prostate, fix it and manipulate it. He had never tried the transverse incision for such cases, as it involves a rather extensive dissection of the perineum.

#### **Repair of Complete Defects of the Male Urethra.**

—Dr. A. A. Berg said that the urethra possessed two attributes that are of importance in the consideration of plastic surgery upon it; namely (1) its considerable elasticity, especially in its penile portion, in virtue of which it can be distracted, so as to supply a defect in its continuity between two and three cm. in extent, and (2) its power of almost complete regeneration from a stump. The parts of the urethra that regenerate are the mucosa and cavernous body. Juglianni demonstrated that a small stump of the urethra implanted into one end of an artificial canal made under the skin will grow and gradually line the interior of the entire canal. The types of plastic operations, to supply defects, and the indications for their employment are:

1. The method of mobilization of the urethral stumps; stretching them until the ends meet and uniting them in this position by end to end suture. It is especially applicable to small defects in the penile urethra; e.g. hypospadias, but it can be also employed in the membranous portion of the canal. Its limitations are (a) large defects, exceeding 2 to 3 cm. in extent; (b) lack of mobility of the urethral ends owing to cicatricial tissues, or (c) too great friability of the urethral ends from preceding inflammation.

2. The method by which defects, partial or complete, are healed by the regeneration of the urethra from its ends (Guyon's operation). This procedure has a wider range of applicability, its only limitations being too extensive destruction of the soft parts overlying the defect, or too extensive cicatrization of these tissues.

3. The method of forming a new canal by grafting skin or mucous membrane, either from the immediate vicinity or from other parts of the body, upon the site of the defect and then uniting such grafts to the proximal and distal ends of the urethral wall. This operation has but a limited range of applicability, and is to be employed only where the others are contra-indicated. In the original paper, the technic of the various operations is minutely detailed. The author details two of his cases of large defects of the perineal urethra, due to extensive sloughing, in which the Guyon operation was employed, with complete restoration "ad integrum."

Dr. James Pedersen thought that the paper by Dr. Berg was most interesting and instructive, particularly because it is generally held, he believed, that the defects in the perineal portion of the urethra ordinarily take care of themselves, so to speak. The urethra there will reproduce itself for quite a distance, as a rule, if treated properly, but cases do occur in which there



is failure, as cited by Dr. Berg. He wished the doctor had detailed one or more cases of defect in the middle penile portion, for it is there that defects are hardest to repair. Defects near the meatus are somewhat easier, provided there is integument enough for a flap. In two such cases he had had satisfactory results from a very simple plastic operation. Last winter he had a case that presented a large defect at the penoscrotal angle, in which he obtained a perfect result by using a part of the scrotum for a flap. In the first two cases perineal drainage was maintained during healing; in the third case advantage was taken of a necessary suprapubic cystotomy for calculus.

Dr. Howard Lilienthal said that he had found it of decided advantage not to close the skin by stitches in cases of this nature, indeed, not to close the skin opening at all, and for the following reason: On one occasion it was his misfortune to have a leak between sutures in a septic case, and there was a complete going to pieces of the entire line of union. There was a dissection of the subcutaneous tissues by pus. If the line of urethral stitches is covered by rubber tissue, and then by gauze, and bandaged firmly, then even if there is a little leak of urine it will find its way out, and if there is no tension during granulation this opening will close spontaneously, whereas, if skin sutures be introduced suppuration may take place beneath the skin and the entire wound will rupture.

Dr. Chas. L. Gibson said it was very interesting to listen to the views already expressed. His own experience had only been with traumatic cases, the classical kind from accidents. He had never attempted to make a complete repair of the divided ends of the urethra, for it did not seem to him to be necessary. The thing to do was to approximate in parts the ends of the urethra, and usually the healing process will easily take care of itself as in repair after external urethrotomy. The catheter should remain in a reasonable length of time, 10 days to two weeks.

A young boy that he saw this summer almost duplicated Dr. Berg's case. He was eleven years old. He received an injury in the usual way, falling astride something. When seen on the fourth day there was extravasation of bloody urine. He found the two ends of the divided urethra and placed in two fine catgut sutures which approximated the roof of the canal. He began to pass a sound so soon as the sinus appeared to close in and narrow. He took a No. 14 French sound and continued to do so until quite recently, when he could only take a No. 10. Under chloroform he rapidly passed sound after sound up to No. 23 French. He thought we could get union from simple procedures, and that we should drain these cases as after an external urethrotomy.

Dr. John Van der Poel was inclined to agree with both Dr. Lilienthal and Dr. Gibson in what they had said. He had had somewhat the same experience as Dr. Lilienthal mentioned and he preferred simply to close the urethra at the beginning, and trust to granulation to do the rest. In case a few drops of urine should leak, it can do no damage, and granulation will ultimately close the wound.

Dr. A. A. Berg said that, with regard to the immediate suture of the two urethral ends, its advisability would depend very much upon the condition of the parts at the time of the primary operation. It would not be a good procedure in infected sloughing tissues; it would be apt to yield best results in clean tissues where the urethral ends are not too far separated, or where the nepture is incomplete. As to the suggestion of dealing with a partially or completely lacerated urethra, in which there is a loss of substance of the urethral wall after the fashion of an external urethrot-

omy, it must be borne in mind that after even a simple external urethrotomy, where there is no destruction of the urethral wall, but merely a linear incision in its long axis, a perineal urethral fistula at times persists. This is due to the lining membrane of the urethra growing out and covering the sides of the perineal wound, thus forming a mucous fistula. There is at present in the wards of Mt. Sinai Hospital such a case; a young man upon whom an external urethrotomy was performed for stricture at one of our city hospitals. To close this fistula it is necessary to dissect out and remove the lining membrane of the walls of the fistula, and then close the urethra by suture. Some cases of partial rupture will heal, if they are treated after our fashion of dealing with cases of external urethrotomy; yet there are more of them in which (as in my second case even after 28 days) there will be no tendency to a closure of the defect.

As regards complete closure of the perineal wound, Guyon never met with a serious suppuration of the stitch-holes. In one of his cases, the stitch-hole infection did not interfere with healing. If the skin is left open, a secondary infection from the rectum may occur. The ultimate result in a majority of the cases will be better if the wound is completely closed. Defects in the penile urethra do not come under the class of cases to which the Guyon operation is applicable. They are best treated by mobilization and suture of the urethral stump.

## NEW YORK NEUROLOGICAL SOCIETY.

*Stated Meeting, Held October 7, 1902.*

The President, Joseph Collins, M.D., in the Chair.

**A Case of Generalized Scleroderma.**—Dr. B. Sachs presented a lady, twenty-four years of age, whom he had first seen six years ago with ordinary hypochondriacal neurasthenia. When next seen, last year, she stated that during the past few years she had noticed that the upper and lower extremities had begun to be stiff and more or less painful on movement. She was not aware at the time that there was anything especially wrong with her face. At present the face shows a very marked form of scleroderma, and she also has distinct sclerodactyly. Six months ago there was so much retraction of the upper lip, as a consequence of the retraction of the skin, that the gums were constantly exposed. The hands show marked tenseness and glossiness of the skin, attenuation and clubbing of the fingers, and an apparent subluxation of the middle finger at the metacarpophalangeal articulation. An X-ray photograph shows that the latter is due to the wearing away of the bone under abnormal pressure. There is also a general scleroderma in this patient extending from the forehead to the middle of the abdomen. The lower extremities are only sclerodermatous in certain areas. There are also some areas of leucoderma. The speaker said that this woman had shown a certain amount of improvement under thyroid medication. She had taken as much as 18 grains a day without detriment, and had also had warm baths and exercises, with the object of improving the condition of the integument and underlying tissues.

Dr. George W. Jacoby said that he had been one of the first to act upon Dr. Sachs's suggestion regarding the use of the thyroid extract, and he was convinced that this treatment accomplished something. About a year ago he had himself reported two cases, in children, in which the skin had become almost perfectly pliable as a result of thyroid treatment. The changes in the fingers had been very much more marked than in the case now under discussion. Of course these patho-



logical conditions did not retrograde. He did not think the pressure of the retracting skin was sufficient to explain the marked bony changes observed. In his opinion, the thyroid treatment was the only one that held out any prospect of success, and it was particularly useful in children.

Dr. Joseph Fraenkel said he believed there were two types of scleroderma, the localized and the generalized. The latter appeared to him to be an expression of a rheumatic tendency. For the last four months he had had a case under observation which had done very well under antirheumatic medication, particularly the use of the salicylates. Ordinarily the thyroid treatment seemed to be the best method.

Dr. Joseph Collins said that he had had some experience with the thyroid treatment and, while he had observed improvement, the results were not at all comparable with those reported by Dr. Sachs and Dr. Jacoby. All that he thought the thyroid did was to diminish the subcutaneous fat. This, of course, made the skin much more pliable over the affected area, and reduced the mask-like appearance of the face. In his opinion scleroderma was a disease of the spinal cord and of the sympathetic fibers and cells within the spinal cord. The symmetry, chronicity, course and termination were all explicable on this theory. He hoped soon to have an opportunity of making a postmortem examination upon a marked and advanced case of general scleroderma. In that patient sensory changes were occurring which pointed strongly to involvement of the conducting pathways of the spinal cord. As young persons have a marked accumulation of subcutaneous fat, and this fat could be very readily increased or diminished, it was easy to explain the good results just reported by Dr. Jacoby.

Dr. Sachs said that in the patient he had just presented there had been an extremely disagreeable appearance of the face a few months ago, resulting from the attenuated state of the nose, a part having very little subcutaneous fat; yet this part had very decidedly improved under the thyroid medication. He would be greatly surprised if scleroderma proved to be an affection of either the spinal cord or of the sympathetic system. The disease seemed to be diametrically opposite to two other diseases—acromegaly and myxedema. He was inclined to think that scleroderma was possibly a general glandular affection involving not only the skin but the subcutaneous tissues and even the bones.

Dr. Edward D. Fisher presented a young man who had first come to his clinic about one week ago. The man was twenty-one years of age, an electrician by occupation. He was apparently well up to the time of enlistment in the Spanish-American war. Over one year ago the left foot began to twitch on attempting to walk. In February, 1902, the right leg became involved, and later the muscles higher up, even in the back. At present all of the muscles below the ribs became more or less contracted on attention. There is no loss of sexual power nor of sensation. The electrical reactions are normal. On standing up there is a twisting of the body and spasm in the feet, the latter causing him to walk on the outer borders of the feet. The process had lately extended upward, so that there was now a mild affection of the muscles of the hands and arms. The diagnosis seemed to rest between myotonia and some functional disorder.

Dr. B. Sachs said he had had an opportunity of examining this man about two weeks ago, and had been impressed with the possibility of the condition being hysterical. He had examined the muscles electrically, and had found them abnormal. There were distinct evidences of a myotonic reaction, a long-continued wave which started in one part of the muscles and

spread up slowly between the electrodes. Moreover, with the object of excluding hysteria he had at first applied a current which was very mild, not letting the patient know that he was doing so. As the current was gradually increased up to the point which should produce a muscular contraction, this wave-like contraction was observed.

Dr. J. Fraenkel remarked that he had seen this patient at the clinic, and that Dr. J. Ramsey Hunt had been unable to obtain the myotonic reaction.

Dr. George W. Jacoby said that these cases emphasized the difficulty of making the differential diagnosis between myotonia and hysteria. He had presented a case of myotonia acquisita to the American Neurological Association. All of the myotonic symptoms were present, and there were the electrical and mechanical reactions characteristic of myotonia. A microscopical examination, however, yielded results that were difficult to reconcile with this diagnosis. Dr. Jacoby said he made a bad prognosis, and had subsequently learned that the man, after winning a lawsuit against a railroad company, became perfectly well.

Dr. Collins thought if the diagnosis of hysteria major was to be made there should be present more stigmata than merely myotonia.

Dr. E. D. Fisher said that the general aspect of the patient had led to the suspicion of a neurosis, but after careful examination the diagnosis of myotonia had been made. The electrical examination had been made last June, and at that time no electrical changes were observed. The man's appearance was certainly that of a neurotic individual.

**Radiographs of a Tumor of the Brain.**—Dr. George W. Jacoby presented some X-ray pictures from a recent interesting case. He said that he had been taking these pictures in such cases for a number of years, but until now the results had been very disappointing. The diagnosis in the present case was a tumor of the brain in the mid-Rolandic region, and the patient had been operated upon about two hours ago. The tumor had been found in the position diagnosed and corresponding to that indicated by the radiograph.

**A Case of Brain Tumor (?).**—Dr. William M. Leszynsky presented a man, thirty-one years of age, first seen a few weeks ago. Ten years ago he began to have attacks of headache followed by vomiting. At first, there was only one attack each month, but more recently they had recurred about once a week. Six months ago the headache became more intense, and was associated with vomiting and vertigo, and he was in bed for three weeks. On getting up he had diplopia. Three months ago he became blind, and since then has been unable to walk. There was now moderate general headache and vertigo. There was no history or evidence of syphilis, and no history of alcoholism or of infectious disease. Examination showed no tenderness on percussion over the skull. There was some rigidity of the muscles of the back of the neck; both pupils were dilated and immovable, not reacting to light or to convergence. Reflex winking was absent on the left, but well marked on the other side. There was paralysis of both right and left abducens nerves, paresis of both internal recti and an inability to converge. Vision was completely absent in both eyes, and there was marked neuroretinitis on both sides, but no choked disk. There was partial paralysis of the seventh nerve and of the orbicularis palpebrarum. There was an actual deviation of the tongue to the left. The grasp was good on both sides. There was no paralysis of the lower extremities, yet he was absolutely unable to stand. There was no apparent weakness of the trunk muscles. The case was presented for diagnosis. The question arose as to whether



there was a tumor of the cerebellum originating in the vermis, or one that had extended to this part from the corpora quadrigemina. If the pyramidal tract were not affected it was possible that there might be a secondary meningitis.

Dr. B. Onuf suggested that there might be a tumor of the pons.

#### A Case of Tabes with Marked Bulbar Symptoms.

—Dr. I. Abrahamson presented a man of forty-four years, seen at the clinic in the latter part of September. There was a history of marked alcoholism. The present illness dated back to last spring, when diplopia developed, quickly followed by ptosis and lachrymation. The man had lost 30 pounds since that time, and difficulty in mastication and in urination had developed, along with hoarseness and various paresthesiae of the throat. The temporal arteries were tortuous, the patient was badly nourished and presented evidence of degeneracy. The Romberg symptom was present and the motions of the eyes were restricted. There was marked wasting of both temporal and masseter muscles, with greatly diminished reaction to both electrical currents. The optic nerve showed beginning white atrophy. The knee-jerks and Achilles reflex were absent on both sides, while the bulbar reflexes were lively. Tactile sensibility was nearly normal. The chief feature of the case was the extensive cerebral and nuclear involvement. The case was evidently one of tabes with very marked bulbar symptoms.

**Differential Diagnosis of Multiple Sclerosis.**—Dr. B. Onuf presented a paper on this subject. He quoted from the literature to show that it was probable that this term, multiple sclerosis, referred to a symptom-complex representing most varied pathological processes. The diseases most apt to be confounded with it were diffuse sclerosis, pseudosclerosis, cerebrospinal syphilis, general progressive paresis, and a number of other diseases, such as tabes, ataxic paraplegia and transverse myelitis. Diffuse and pseudosclerosis had a symptomatology so similar to that of multiple sclerosis that he did not feel the differential diagnosis could be clearly made. The multiplicity of the lesions of cerebrospinal syphilis, and the recurrence of the symptoms after intervals of comparative freedom from them, bore a close resemblance to multiple sclerosis. It was evident therefore that the diagnosis must be founded on a complete clinical picture rather than on one or two individual symptoms. The value of antisyphilitic treatment was great as a diagnostic aid, but the results were not wholly reliable, particularly when marked improvement was not noted within a period of about two weeks. Spasticity was just as frequently observed in syphilis, and the intentional tremor he had seen very typically developed in a case of undoubted cerebral syphilis. Fairly developed nystagmus pointed very strongly to cerebral syphilis as against disseminated sclerosis. Scanning speech was a strong symptom in favor of disseminated sclerosis as against syphilis. There were two symptoms which he considered of great importance: (1) The facial expression, and (2) an emotional state associated often with marked euphoria. These two symptoms were relatively rare in syphilis. Optic neuritis was present in a large percentage of cases of multiple sclerosis, and was often the only symptom in the early stages; however, optic neuritis was very common in cerebral syphilis, though it was more apt to be attended by retinal hemorrhages. The fact that multiple sclerosis was often ushered in by some acute disease was a point of some diagnostic importance. The speech disturbance in general progressive paresis was often quite marked; indeed, this affection should not often be confounded with multiple sclerosis. The number of spinal diseases that might be simulated by multiple

sclerosis was very great. In doubtful cases the presence, besides the spinal manifestations, of symptoms pointing to multiple cerebral involvement would speak in favor of disseminated sclerosis, as would also the symmetry and regular distribution of the spinal symptoms. The speech of bulbar palsy might be very much like that of multiple sclerosis, and the patient might also be distinctly emotional.

Dr. Fisher thought multiple sclerosis was most likely to be confounded with cerebral syphilis and general paresis, and yet it was only at certain stages that even here any difficulty existed. The tendency to stupor and attacks of prolonged sleep, and the ocular palsies were characteristic and were not observed in insular disease. In general paresis the flattening of the face, the tremor and the articulation were quite similar, but the mental state was quite different. At times multiple sclerosis might be confounded with hysteria. The disease being very slow in its progress, years might elapse before the true diagnosis of insular sclerosis could be made. It should be borne in mind that insular sclerosis sometimes occurred in young people, at the age of sixteen or eighteen years, a point of differentiation from cerebral syphilis.

Dr. Onuf agreed with Dr. Fisher that the tendency to somnolence was ordinarily a strong symptom in favor of syphilis, and admitted that it was sometimes difficult to distinguish the disease from hysteria.

#### Arterial Disease in Comparatively Early Life.

—Dr. E. D. Fisher read a paper with this title. He said that if one had not established oneself in some definite line of work by the age of forty, one would rarely succeed. This was the law of life. Having excluded syphilis, kidney disease, diabetes, alcoholism and old age there would still be a number of cases of arterial disease having a different etiology. He was of the opinion that cerebral hemiplegia was more than ordinarily common at the present period of our national development. There was an intensity in the pursuit of an object in the Anglo-Saxon race not present in the Latin races. This led us to a very large consumption of tissue. He believed that the so-called strenuous life led to fatty degeneration of the cardiac and arterial muscular tissue. If this view were correct, then the means of prevention were obvious and important. Our social system in the large cities was one of anxiety and overwork. There should be less straining after living, as is the case with the very rich, and a stronger desire for culture and moderation.

Dr. W. B. Noyes raised the question as to whether in the treatment of so many diseases of the nervous system with strychnine physicians were not committing a grave error. The effect of this drug on the arteries was not closely studied, and it had occurred to him that in cases like those described in the paper, in which there was, in his opinion, arterial disease, the persistent use of a drug like strychnine, which increases the arterial pressure, was actually harmful, and more than counterbalanced the beneficial action of the remedy upon the peripheral nerves. He believed that many of those present could bear him out in the statement that iodide of potassium frequently benefited many cases in which there was no syphilitic taint, probably by its effect on the vascular system. He would like to hear from others regarding this view that strychnine and iodide of potassium are, to a certain extent, antagonistic in their action on the vessels.

Dr. Leszynsky said he could not agree with Dr. Fisher in the contention that the so-called strenuous life produces cerebral and arterial degeneration, unless this was accompanied by alcoholism, syphilis or some other toxic cause. He had never seen a patient under forty years of age with a cerebral hemorrhage or en-



darteritis unless there was some discoverable cause which would lead one to the belief that such conditions had previously existed.

Dr. Sachs said it was interesting to consider whether there was really arterial disease in early life sufficient to lead to apoplectic attacks. Personally, he could not recall a single case of cerebral hemiplegia which was not due to arteriosclerosis, syphilis or embolism, or was not the accompaniment of renal disease. There was only one other vascular degeneration occurring early in life, i.e., a fatty degeneration of the artery, and which explained the very early apoplectic attacks in children. When he had been able to exclude embolism, renal disease and syphilis he had always come to the conclusion that the case was one of early arteriosclerosis.

Dr. Joseph Collins said that he found it very difficult to talk upon arterial disease—not sclerosis. He was thoroughly convinced that chronic degeneration of the tunica media, arteriosclerosis, was a disease of the strenuous life, and that alcoholism, rheumatism, syphilis and the so-called metabolic diseases had very little to do with this. A deficient heredity was one of the contributing causes. Another was chronic indigestion of any kind, and a third was worry with work. These were more potent causes of arterial degeneration than syphilis, alcoholism and bad habits. The last named conditions caused peri-arteritis and endarteritis. A second great class of cases was dependent upon infections; some would put these as the first and more important class. We had been taught as students that arteriosclerosis was a disease occurring in those past fifty, but he maintained that this was not true, and that when the disease began at that time it was nothing more than a natural process at that age. A person of sixty-five or seventy years of age becoming ill with an infection like pneumonia usually had the disease in an exceedingly mild form. He would further contend that arteriosclerosis was, at the present day, the scourge of humanity, and that there was no organic disease of the nervous system that could compare with it in its effect upon the production of disease.

Dr. Leszynsky thought the last speaker had begged the question with regard to young subjects. If the strenuous life reacted upon digestion and interfered with assimilation, it caused an intoxication or an infection, and in this way set up an arteriosclerosis. He did not think any proof could be adduced to show that the strenuous life alone produced arteriosclerosis.

Dr. Fisher, in closing, said that a man over forty years of age would rarely start out in a new line of work, although he might continue to do much very good work in old channels up to quite late in life. If he had understood the remarks of Dr. Collins, he did not think their opinions were very much at variance on this topic. By arterial disease he meant any morbid condition of any part of the arteries.

#### NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, Held Thursday, October 16, 1902.*

The Vice-President, Charles L. Dana, M.D., in the Chair.

THE scientific business of the evening consisted of the reading of a paper by William H. Thomson, M.D., on "The Pathology and Treatment of Epilepsy."

**Essential Symptoms of Epilepsy.**—Dr. Thomson said that the more is understood of epilepsy, the more is it appreciated that the disease is absolutely unique in character. The most important question for the diagnosis of epilepsy is, What is the invariable symptomatic element? Epilepsy is usually considered to be a convulsive disease, but it is not always or necessarily asso-

ciated with convulsions. The convulsive movements of the patient are terrifying, attract attention, and hence have been thought to be most important. Epilepsy is sometimes spoken of as of a mild character. It is doubtful if it is ever mild. There is no such thing as an incomplete epileptic. The patient either suffers from epilepsy or does not. Petit mal is not partial epilepsy, and may very well develop into the severest form of epilepsy. Cases are seen in which some single apparently insignificant symptom indicates to the physician the presence of epilepsy, and before long the beginning of mental deterioration shows their seriousness. It is often said that epilepsy is a discharge of nerve-force, as if there were such a thing as a spontaneous explosion of nervous energy. The idea underlying such expressions, however, is associated with the thought that convulsions constitute the essence of epilepsy, and as will be seen before the end of the paper, the epileptic attack has quite another beginning. Loss of consciousness is sometimes spoken of as the pathognomonic symptom of epilepsy. It has assumed an importance in differential diagnosis that does not uniformly belong to it. Dr. Thomson has had some cases that illustrate this fact very clearly. In one patient there were clonic movements that involved the left leg and the right arm and were entirely controlled by proper treatment, so that the patient was absolutely free from them for seven months after being first seen. Then one day in his office, after the characteristic epileptic cry, the patient's jaws became locked, so that he could not move them at all, though they gave him great pain. All during the attack, he retained perfect consciousness. In another case the attack always began by a period of aphasia. This symptom rarely lasted less than an hour, during which the patient was unable to say a word, though his consciousness remained perfect. His intellectual activity was so acute that he made experimental studies on himself while in this condition and found that he could recognize distinctly the differences between sharps and flats on the violin and that he could play the instrument quite as well as before the attack began. On one occasion his aphasia came on while crossing the Atlantic. He made his way to his cabin and attempted to write a note to the ship steward in regard to his condition. He began it in French, but found that he could not finish it in this language, and then began it in German. He stuck at the same part of the sentence, and then tried it in English, only to fail once more at the crucial point.

Sometimes symptoms that are seemingly without significance may be the forerunners of serious developments in epileptic patients. Dr. Thomson recalled a case in which the parents brought a child who had a queer caper of ducking his head many times a day. The family considered it rather a trick than anything more serious, and rather laughed at it. The child was brought to Dr. Thomson with the idea of having him suggest some means of breaking the supposed habit. At the time of the occurrence of the ducking of the head, Dr. Thomson found that the eyes became fixed and the pupils dilated. He pronounced it epilepsy, and it was not long before signs of mental hebetude began. The child became an idiot within two years and fortunately died not long afterwards.

**Protean Symptoms of Epilepsy.**—Epilepsy is a protean disease, with physical as well as convulsive symptoms that may occur with or without loss of consciousness. The mental state may constitute one of the most important features of an attack. The manifestation of seizure may be the performance of some very foolish action like stripping off the clothes, or a slight convulsion may be followed by an attack of mania. In one case, immediately after a convulsion, the patient



would get up to rush at any one whom he happened to see nearest to him. No matter how many symptoms there are in the epileptic attack, the first symptom ushers in the epilepsy and is not merely a prodrome of it. There may be a queer feeling in the thumb, or a queer idea in the mind that announces the beginning of the attack. These are not preliminaries.

**Invariable Symptom.**—There is one unvarying element, he thought, in epilepsy. It is the suddenness of the attack. A little reflection will show that epilepsy is the only sudden disease. Accidents, of course, are sudden, but the development of other pathological conditions, except epilepsy, are gradual. Cerebral hemorrhage may be thought of as sudden, but the development of the vascular changes that lead up to it are gradual. The presence of this symptom gives the clue to the character of a seizure that is in doubt. The symptom is more significant than any other, and is the true pathognomonic sign of epilepsy.

**No Spontaneous Nervous Discharge.**—There is no such thing in physiology as a spontaneous discharge from a motor nerve. The efferent nervous impulse is always a response to an afferent nervous irritation. The afferent nerve-impulse is always the first nervous phenomenon in any individual. There need not necessarily be any ratio of importance between the afferent impulse and the efferent effect. Dr. Seguin pointed out that 110 muscles are brought into action during the process of sneezing. This widespread nervous discharge may be due to some slight irritation of a branch of the fifth nerve, distributed through the mucous membrane of the nose. The reason why there are no such intense nervous discharges in other parts of the body is that inhibition serves to control other groups of nerves.

**Importance of Inhibition.**—It is by inhibition that many of the important actions of life seemingly habitual and easy are rendered possible. For instance, it would be impossible to stand were it not that habitual inhibition asserts itself and enables the extensor and flexor muscles so to coordinate their motions as to produce equilibrium. Then a different environment makes the afferent stimuli unlike what they were before. The traveler who stands for the first time at the top of the Great Pyramid trembles and is scarcely able to hold himself erect, because his eyes fail to find a near horizon upon which to rest, and the optic nerves fail to send messages of assurance for the support of the body.

Dr. Thomson has collected some literature from 19 cases of spasmodic seizures followed by death in tetanic convulsions as the result of the passage of a stomach-tube and the washing out of the stomach. It would seem that the nuclei of nerves lying on the floor of the fourth ventricle are especially sensitive and liable to set up a flow of nervous impulses even on very slight stimulation. Forty-two cases of death under almost similar circumstances are reported as the result of irrigation of the pleural cavity. These convulsive seizures manifestly occur as the result of stimuli which the nervous system is unaccustomed to inhibit. As a consequence of this lack of habit, the afferent impulse sets up an efferent explosion of nervous reflexes in the motor tract that eventually prove fatal. Epilepsy would seem to be just such an event. It is not a spontaneous explosion, but an excitation of motor centers lacking proper inhibition as a consequence of afferent stimuli.

**Definition of Epilepsy.**—The best definition of epilepsy then would seem to be that it is a disturbance of normal inhibition by some abnormal excitation. This shifts the pathogenesis of epilepsy from the motor side of the nervous system to the sensory side. Some of the causes in the sensory side of the nervous system that may produce epilepsy are well known. Occasionally it may occur as the result of such a pathological

condition as sunstroke. When it does, the patient has a tendency to uncomfortable feelings whenever exposed to the sun, and there is a certain supersensitiveness of the nerves of temperature-sense. In these cases it often happens that the administration of the biniodide of mercury, in doses of one 1-25 of a grain, three times a day, produces good results. The use of the biniodide of mercury ointment applied to the mastoid is also effective. These were the recommendations of Dr. Fuller of London, many years ago.

**Sensory Origins of Epilepsy.**—It is not unusual to find in epileptics certain peripheral sensory nerves, extremely sensitive. Frequent swallowing movements are a trait that has often been noticed in epilepsy. An attempt to examine their throats with the laryngoscopic mirror usually leads to gagging, or even vomiting, as soon as the throat-mirror touches the veil of the palate. Their swallowing movements seem to be the result of this supersensitiveness. Very often epileptics bolt their food. This seems also to be due to the fact that the sensitiveness of the throat tempts them to swallow as some of the cases of so-called idiopathic epilepsy the this region. There seems good reason to think that in some of the cases of so-called idiopathic epilepsy the sensory stimuli that lead up to an attack are due to this sensitiveness of the throat. The condition can be overcome by painting the pharynx with a solution of nitrate of silver of the strength of two grains to the ounce. The use of this solution should not be continued for long, owing to the danger of producing argyria. Dr. Thomson has seen two cases in which the frequent use of such a remedy has led to some darkening of the skin of the face. After a time the pharynx may be painted with a dilute solution of iodine.

The most important remedy for epilepsy is bromine as a bromide. It is agreed by all physiologists that the action of bromides is limited exclusively to the peripheral sensory nervous system. It is by reducing the afferent stimuli that the epileptic types of attack are overcome. This constitutes almost a demonstration of the afferent cause of epilepsy. In the use of a bromide it must be remembered that the complications consequent upon their employment must be avoided if the effect of the drugs is to be obtained. Bromism should be postponed as long as possible. Dr. Thomson has had good success with Dr. H. C. Wood's suggestion to give a certain proportion of antipyrin with ammonium bromide in the treatment of epilepsy. The nervous system gradually becomes accustomed to the influence of antipyrin, and then other coal-tar products should be substituted for it. Chloral in combination with the bromides also adds to their efficiency, but it should never be given in more than 10-grain doses.

**Prophylaxis of Epilepsy.**—In the treatment of epilepsy reliance should not be placed exclusively on drugs, because this invites failure. The main element of therapeutics is the avoidance of everything that can lead up to the epilepsy. For this purpose the patient's general health must be improved as much as possible. All tendencies to auto-intoxication from the digestive tract should be corrected by the use of a bland and unirritating diet. There is no such thing as epileptiform convulsions in the sense that an attack in an epileptic resembles epilepsy, but is not the malady. The symptoms may be very slight, as in infants, but they are none the less epilepsy. It is important then to take care even of the mildest epileptic symptoms. In order to avoid the absorption of irritants from the intestine, the use of red meat should be forbidden. Many of the carnivorous animals die from epileptic convulsions and are subject to convulsive seizures, while the herbivorous animals are not. All individually indigestible foods should be avoided, no matter how unirritating they may



prove for most people. This precaution should be taken especially at the evening meal.

**Insufficient Renal Elimination.**—Dr. Thomson has seen cases of epilepsy in which undoubtedly the underlying pathological condition was the failure of proper renal elimination. Two of the individuals who came to him for treatment under these circumstances had recently passed life-insurance examinations. One of them was eliminating only 13 grains of urea per day, and the other only 15 in the same time, instead of 24 to 30 grams. The most important element of prophylaxis is undoubtedly an abundance of fresh air, such as can be only obtained by a largely open-air life. The open air has the property of distinctly diminishing all reflex excitability, and epileptics should be taught to live practically out of doors.

**Underlying Pathological Condition of Epilepsy.**—Dr. B. Sachs, in opening the discussion, said that he does not dispute the fact that afferent stimuli may be causative of epilepsy. They are, however, not sufficient by themselves to be the entire etiology of the affection. All normal individuals have afferent stimuli of more or less intensity, but there are very few epileptics. Hence it is evident that there is an accessory underlying condition in the brain that is responsible for the epilepsy. This pathological condition, by no means always or necessarily, lies in the afferent nervous system. Certain changes in the nervous system make the motor nerves more responsive than before, and the consequence is the nervous explosion that is called epilepsy. Suddenness is a most important symptom of epilepsy. But it would be a mistake to attribute too much importance to it, especially if in so doing the value of the loss of consciousness as the most prominent symptom of epilepsy should be lost sight of. Loss of consciousness may sometimes fail to be present as a symptom of an epileptic seizure, but it is the best characteristic symptom, and when there is question of the differential diagnosis of hysteria or epilepsy it constitutes an extremely valuable, almost pathognomonic sign. Dr. Thomson's paper will prove of great value if it will only teach the important lesson that all possible peripheral nervous irritation must be removed in epileptic patients. It has long been Dr. Sachs's custom to insist very much on the importance of irritative conditions at the periphery in the production of epileptic attacks. This is especially important for all irritative conditions of the nose and throat. In children especially attention must be paid to the gastro-intestinal tract. In mild forms of epilepsy the removal of all irritating conditions will often make the bromides unnecessary and will considerably lessen the amount of this drug that has to be given in any given case, a very noteworthy advantage in the treatment of epilepsy.

**Significance of Inhibition.**—Dr. S. J. Meltzer said that the word inhibition has been used in many different senses. To speak of epilepsy then as a failure of inhibition may very easily lead to misconceptions. The movement of flexion and extension of the leg requires alternate inhibition of the nerves supplied to the extensor and flexor muscles. Many of the sensory auras with which epilepsy begins are in their way rather manifestations of inhibition than of excitation. For instance, an appearance of light before the eyes is a stimulus, but, if as is sometimes the case, a black ball is seen, this is an inhibition of the proper function of the optic nerve, whose function is to see light. There is a distinction between exciting and primary cause that must be borne in mind. A match may set off a quantity of high explosives with resultant terrible destruction. The match can scarcely be said to be the cause of the damage done. Some slight sensory irritation may induce an epileptic attack, but the underlying pathological con-

ditions are responsible for its effect. There are two conditions, reflex epilepsy and idiopathic epilepsy, and in the latter no exciting cause can be found.

**Suddenness Not All Important.**—Dr. Pearce Bailey said that epilepsy has taken on a new aspect since medical observers have come to realize that it is by no means necessarily connected either with convulsions or loss of consciousness. Suddenness is not, however, a pathognomonic symptom of epilepsy. In myotonia congenita, known as Thomsen's disease, a name very nearly resembling that of the reader of the interesting paper of the evening, the onset of an attack is always sudden. Hysterical attacks may occur quite suddenly. On the other hand, epilepsy need by no means necessarily begin suddenly. Dr. Thomson includes the aura in an epileptic attack, and yet patients by means of this symptom may know for hours or even a day beforehand that an attack is coming. Hence suddenness is not so important. A recent investigation carried on at Craig Colony shows that very trying sensory stimuli do not add to the number or severity of epileptic attacks. Sixty patients at Craig Colony were found to be suffering from astigmatism, requiring glasses. The careful record of the number and severity of their attacks for several weeks was made, and then they were supplied with the proper glasses. This relief of sensory disturbance made no difference in the character of the epilepsy. In the treatment of epilepsy drugs are least important. Muscular exercise and outdoor air are the best remedies.

**Definition of Epilepsy.**—Dr. William P. Spratling, Medical Superintendent of the Craig Colony for Epileptics of Sonyea, N. Y., said that epilepsy is an extremely difficult disease to define. Like insanity, it almost defies definition. If Dr. Spratling were asked to define it he would first insist on this practical impossibility of definition and then suggest that epilepsy is a nervous affection, generally characterized by some impairment or loss of consciousness, coincident with some impairment or loss of the power of motor co-ordination, with or without convulsions, the paroxysms being generally abrupt in appearance and short and variable in duration. Suddenness is not an invariable symptom of epilepsy. A motor or psychic aura may be present for days before an attack. At the Colony it is not unusual to note some change in the personality of the patient as a premonitory symptom of an epileptic attack. A patient comes with complaints, evidently not very well founded, or for some trivial reason. The disposition is different from what it was before, and the physician recognizes that an attack is impending. The patient is therefore put off for a day or two, the attack comes, and then nothing more is heard of the complaints.

**Defect of Brain as Basis.**—There is always some defect of the brain as the basis for epilepsy. The brain is an apartment-house, containing many different quarters, and the character of a fit depends on the part of the brain that is affected. Some interesting peculiarities are noticed in this respect. A certain German patient, who talks English very well, always suffers from aphasia after an attack. He invariably recovers his faculty to talk German some time before his English returns to him. Dr. Spratling said that after seven years spent at the Colony his views with regard to the curability of epilepsy are more optimistic than at the beginning. The most important therapeutic measure is diet. After that comes some outdoor employment that gives constant occupation of mind and a sufficient amount of exercise for the body. In this way epilepsy can be educated out of the system. The prognosis depends largely on the mental condition. If the mind is affected then the prognosis is very unfavorable. Epilepsy, however, is absolutely curable in certain cases.



There is no single set of causes for epilepsy, but almost anything that can produce the pathological impression from the central nervous system, especially the brain, may be the basis for attacks.

**Abuse of Bromides.**—Dr. William Leszynsky said that the unfortunate feature about our present therapeutics of epilepsy is the abuse of the bromides, since for many medical men the recognition of the presence of epilepsy is at once inevitably followed by the thought that bromides must be administered. These depressant drugs are given in such large doses, to the detriment of the general health, that they often do more harm than good, though at first they may control the attacks. Dr. Leszynsky insists first on the regulation of the life and the maintenance of hygienic measures. Outdoor occupation is one of the most important directions that can be given to the patient. After careful regulation of the diet and the outdoor exercise the bromides can very often be dispensed with. Dr. Leszynsky illustrated his remarks by a case in which there had been a series of seven or eight attacks in nine months, and the regulation of the life and the diet, with general directions, had kept the patient from having any further attacks although no drugs were employed at all.

**Strychnine with Epilepsy.**—Dr. Ralph Parsons described a series of cases in which strychnine before the introduction of the bromide was used for epilepsy with excellent results. It was given in small but tonic doses and insistence was placed upon outdoor air and upon general control of the patients. In children this tonic treatment seemed to do very well and brought better and more lasting results than the depressant bromides do in similar cases now.

Dr. Thomson, in closing the discussion, said that most of those who discussed his paper had mistaken part of his contention with regard to the newer standpoint from which epilepsy should be viewed. He does not consider that any afferent stimulus no matter how excitant may produce epilepsy, but an abnormal afferent stimulant. The peripheral irritability of nerves that may produce central disturbance is very well illustrated by the effect of strychnine in experimental observations. The patient lies perfectly still and quiet until some peripheral stimulus sets up a spasmodic seizure. A breath of air, a flash of light, the touch of a feather may bring on a convulsion. So when the central nervous system is in an excitable condition a slight afferent stimulus may produce an explosive convulsion. No one has ever shown that an efferent action of the motor nervous system can be spontaneous. Such an incident is unknown in physiology. The afferent stimulus need bear no definite ratio to the result. It may be small as in a sneeze, and yet the motor affection in response may be wide. The suddenness of epilepsy refers to any of its symptoms. The epileptic aura is not a premonition, but the epileptic attack itself. Patients do not know epilepsy days before, but they feel the toxemia.

## BOOK REVIEWS.

SELECTED ESSAYS AND ADDRESSES BY SIR JAMES PAGET.  
Edited by STEPHEN PAGET, F.R.C.S. Longmans,  
Green and Co., London and New York.

MODERN medical literature is so full of exact science and the detail of minute observation, that it is refreshing occasionally to climb to a height where detail is lost in perspective. The picture of Humboldt seated on an Alpine peak with a note-book in his hand, jotting down observations on the lesser Alps around him, is symbolic of the mental attitude of Sir James Paget in this book of charming and varied essays. They are

literary and philosophical rather than didactic; broad and suggestive, rather than exhaustive. They do the reader the honor to infer that whether he is a student, a practising physician, or a pure scientist, he has a grasp of his subject that makes it unnecessary to review the steps by which the author has reached his conclusions.

The essays are singularly clear and forceful in their English, and so admirably constructed that the central idea of each is never lost in the facts that support it. Incidentally, but by no means accidentally, some of the most interesting medical questions are discussed in the essays; questions which, being in the minds of the profession as well as the laity, Sir James Paget was asked to answer in the form of an address before some society, or in an oration on a special occasion.

A glance at a few of the titles will show that the range of subjects was varied: "What Becomes of Medical Students?" "Nervous Mimicry;" "Theology and Science;" "The Contrast of Temperance with Abstinence;" "National Health;" "Use of the Will for Health." The more purely clinical essays, taken from studies of old case-books, and certain reports published in hospital transactions, show the master-touch of experience in divining the true nature of disorders. In these, instead of dispensing mere facts and averages, he hands down the ripe judgment of years to a younger generation. It is the accumulated good sense of a lifetime, not the mere latest word on the subject, that he gives in these essays.

The philosophical point of view from which he treats even the simplest proposition may be shown by a few excerpts. In his Hunterian Oration, which is an excellent and stimulating bit of biographical tribute, he says: "I believe that in contemplation of such as this Hunter enjoyed a calm, pure happiness. So Reynolds, his friend, seems to tell of him. In that masterpiece of portraiture, which teaches like a chapter of biography, Hunter is not shown as the busy anatomist or experimenter pursuing objective facts; the chief records of his work are in the background; he is at rest and looking out, but as one who is looking far beyond and away from things visible into a world of truth and law which can only be visibly discerned. The clear vision of that world was his reward. It may be the reward of all who will live the scientific life with the same devotion and reward."

In his "Elemental Pathology," he correlates many facts of vegetable pathology with human decay or disease, illustrating truths and giving shrewd guesses at the still undiscovered relations of some diseases to the body, that afford more food for reflection than many a bacteriological report. For instance, he says: "The changes of color in leaves are not mere chemical changes ensuing a dead past, they are vital changes in the same sense as those which we see ourselves in the advance of old age." Summing up the whole history of the coloring, withering and falling of leaves, he observes: "It would be hard to find a more admirable instance of processes adjacent, concurrent to a common end, yet independent. We have many of the kind in our pathology as of vital processes tending to one end, but not guided from one center, concurrent, but not concatenate; as independent as are the works of the several bees that make one honeycomb." His analogies in repair tissue, in gall-growths and the possible relations between galls and our specific diseases, such as eruptive fevers, syphilis, cancer, gout and others, contain hints of truth which, published 20 years ago, have in some cases precluded the facts, and in others are still fraught with suggestion.

In his essay on "The Contrast of Temperance with Abstinence," he writes from a broad and general survey



of public health and of heredity, and pronounces in favor of the moderate use of stimulants. His address on "National Health and National Work" contains pages sprinkled with figures; but his statistics all point a moral, and his review of the relation between national health and work is extremely suggestive.

To the practising physician especially this book will be interesting, for it is distinctly the work of a man who knew his patients well, but who derived from each a philosophical appreciation of his case, in addition to his observations. Moreover, it is a book that charms, as does an intimate photograph, with the simple personal reality of this famous London physician.

**THE ARTIFICIAL FEEDING OF INFANTS, INCLUDING A CRITICAL REVIEW OF THE RECENT LITERATURE OF THE SUBJECT.** By CHARLES F. JUDSON, M.D., Physician to the Medical Dispensary of the Children's Hospital, and J. CLAXTON GITTINGS, M.D., Assistant Physician to the Medical Dispensary of the Children's Hospital. J. B. Lippincott Company, Philadelphia.

THERE have been so many semipopular works on the subject of infant-feeding, works that are the familiar word of the child's specialist to the mother, the medical student or the local practising physician, that it is almost startling to glance through the pages of this work by Drs. Judson and Gittings. Science fairly radiates from its pages. Here are chemical formulae, percentages, tables, increase of weight in grams, constituents of the infant body in terms of salts, and descriptions of digestive processes in the language of enzyme.

It is also startling to see the well-known theories of well-known authorities set side by side and covering the range of opinion in Europe, England and America, and to note how completely some of them contradict each other.

In infant-feeding, medical science has run a little to fads. One can trace the rise and fall of theories based upon new discovery, such as insistence upon the sterilization of milk, following in the track of bacteriology, and succumbing to the teachings of the chemistry of digestion. The value of this work lies not in any single new teaching that it propounds, but in its broad outlook upon the subject. It is a very able exposition of the principles and methods of artificial feeding in practice to-day. It is practically a résumé of all the authoritative experimental work that has been done in the last few years in Europe and America. It is no handbook, although a very handy volume. It is an exhaustive treatise upon the subject, implying a knowledge of modern chemistry and physiology which demands careful reading of the general practitioner. Yet its outcome and conclusions are so practical and its logic so clear that it will serve as a solid basis of study for every physician who has much work with infants.

The tone of the book is that of laboratories and hospitals, but it is fresh and new because it is the collected experience of the most recent work, which has not yet emerged from reports and pamphlets into textbooks. The arrangement of matter is clear and concise. In spite of necessary repetition the facts are well ordered; and each page carries with it a convincing weight of authority.

The chapter on digestion is excellent, and must be carefully read and itself digested, in order to appreciate the following chapter, which is a complete work on Modern Methods of Infant-Feeding.

The closing chapters of the book sound more familiar, as they treat the different well-known principles of infant-feeding and give directions for home modification of milk, with practical rules for feeding; but even these

do not bear the imprint of any man's pet theory. They are rather the transmutation of cold science into available warm bottles for hungry infants.

It is commendable that so much material has been put in such a compact and well-printed form. The book is an octavo with good margins and large print, yet it contains everything of value that has been said in the last few years on the feeding of infants.

**A SYSTEM OF PHYSIOLOGIC THERAPEUTICS.** A Practical Exposition of the Methods, Other than Drug-giving, Useful in the Prevention of Disease and in the Treatment of the Sick. Edited by SOLOMON SOLIS COHEN, A.M., M.D., Professor of Medicine and Therapeutics in the Philadelphia Polyclinic. Volume IX. Hydrotherapy, Thermotherapy, Heliotherapy and Phototherapy by Dr. Wilhelm Winternitz, Professor of Clinical Medicine in the University of Vienna, Director of the General Polyclinic of Vienna, Assisted by Dr. Alois Strasser and Dr. B. Buxbaum; and Balneology and Crounotherapy by Dr. E. Heinrich Kisch, Professor in the University of Prague, Physician at Marienbad Spa. P. Blakiston's Sons & Co., Philadelphia.

LIBERAL as would seem to be the supply of material thus stated in the larger print of the title of this book, there are still other chapters that are of special interest to American practitioners. Dr. Guy Hinsdale contributes an article on American Springs. Dr. A. C. Peale, an assistant in the National Museum, Washington, D. C., has a series of special chapters on mineral waters and their distribution in the United States. His experience while in charge of the mineral-water statistics of the United States Geological Survey enables him to make this department especially valuable and authoritative. Dr. J. K. Kellogg of Battle Creek, Mich., contributes an article on the practice of phototherapy and thermotherapy in this country; while Dr. Harvey Cushing of the Johns Hopkins Hospital, Baltimore, has an article on saline irrigation and infusion, and there is a 30-page appendix by the editor which contains some very practical clinical applications of various therapeutic methods that previous contributors have failed to mention.

The series of books published in the system of physiological therapeutics are mainly written by American contributors. The editor's selection of cooperators in the work has been deservedly commended by many reviewers. The present volume is mainly written by foreign authorities. In this, however, the editor's judgment has not been at fault, and his selection of Dr. Winternitz must commend itself to all those who understand how much the distinguished Vienna specialist has helped to develop the great subject of hydrotherapeutics.

The special merits of the "System of Physiologic Therapeutics" is that directions for the application of remedial measures are so definitely given. In the present volume this quality is especially noticeable. While general principles of treatment are thoroughly discussed, the specific details as to methods of treatment for various forms of disease are given very completely. Winternitz describes very fully his own methods, without undue neglect of hydropathic applications that have been found useful to others.

The chapters on the mineral waters of the United States are especially satisfactory. There is unfortunately too much ignorance in this country of the great mineral-water resources at our command. Most practitioners know more about the mineral waters of Europe than those of the United States, and yet we are by no means lacking in curative mineral waters to meet practically any indication.

The chapters on heat and light therapy are excellent



in their practical suggestion as to the methods by which these agents can be used in ordinary practice.

The whole works reflects credit, not only on the editor and his select staff of contributors, but on American medicine. The remedial measures other than drugs have never before been discussed at once with so much perfection of knowledge and such thorough realization of the limitations of the subject, yet so little enthusiastic exaltation of the partisan specialist. The work can not fail to do great good, and it must bring the profession to realize what excellent therapeutic measures are being left too much in the hands of the charlatan.

**DISINFECTION AND DISINFECTANTS.** A Practical Guide for Sanitarians, Health and Quarantine Officers. By M. J. ROSENAU, M.D., Director of the Hygienic Laboratory and Passed Assistant Surgeon U. S. Public Health and Marine Hospital Service, Washington, D. C. P. Blakiston's Son & Co., Philadelphia.

DR. ROSENAU's experience as an official of the Marine Hospital service has given him ample opportunities to study practically the problems with which he deals in this manual. He has an excellent practical account of the use of such agents as sunlight, dry heat, boiling and steam for the general purposes of disinfection, and of such gaseous disinfectants as formaldehyd-gas, sulphur dioxide, hydrocyanic acid, chlorine, oxygen and ozone. There is besides a discussion of the principal chemical disinfectants and of the various insecticides to be used for the prevention of the spread of insect-borne diseases. The last chapter contains directions for disinfection in the various specific communicable diseases, from typhoid fever, cholera and smallpox through anthrax and tetanus.

The book is of eminently practical character. It is well put together and without waste of words. Practical points not easy to be found elsewhere occur on nearly every page. Perhaps there is an embarrassment of riches, too many suggestions from which the physician is supposed to make his choice, instead of insistence on some special method or chosen substance for a given purpose. It is suggestively illustrated.

**THE PRACTICAL MEDICINE SERIES OF YEAR BOOKS.** Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly Under the General Editorial Charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume X. **NERVOUS AND MENTAL DISEASES**, Edited by W. L. BAUN, M.D., and HUGH T. PATRICK, M.D. September, 1902. The Year Book Publishers, Chicago.

THE section on Neurology in this volume contains an excellent review of the more recent developments in the symptomatology of nervous diseases. The significance of astereognosis—that is, the failure to be able to recognize objects by touching them when the eyes are closed—is well brought out. In numerous cases on record, with anesthesia resulting from a lesion in Rolandic area it appeared that the one constant disorder was that of the stereognostic sense. It seems a reasonable supposition therefore that the Rolandic region contains at least the area representing the principal aggregation of cutaneous and muscular memories whose correlated actions acquaint us with the various qualities of external objects. Other symptoms such as the Babinski reflex, the Achilles jerk, the scapulo-humeral reflex and Kernig's sign, as well as the anterior tibial sign, are suggestively discussed. In mental diseases there is an excellent review of recent attempts

at a better classification of these ailments. The whole book is a very practical little manual of up-to-date ideas in the diagnosis and treatment of difficult affections.

**WOOLSEY'S SURGICAL ANATOMY.** Applied Surgical Anatomy Regionally Presented, for the use of students and practitioners of medicine. By GEO. WOOLSEY, A.B., M.D., Professor of Anatomy and Clinical Surgery in the Cornell University Medical College; Surgeon to Bellevue Hospital, etc. Lea Brothers & Co., New York and Philadelphia.

THE principle of modern pedagogy which seeks to replace the necessarily more or less evanescent impressions received from large groups of isolated facts acquired through the mechanical acts of brute memory, by substituting the more permanent results of the association of ideas has never been more advantageously applied than in the presentation of the study of anatomy. Of late years numerous works have appeared, both in our own and in foreign languages whose object it has been to dispose the enormous amount of material belonging to this subject in such fashion as to give prominence to the practical bearing of each important point and render evident its use in the every-day work of diagnosis and treatment. Some of them have been more and some less successful in this attempt, but it requires no lengthy examination of the present volume to assure the reader of its preeminence over its predecessors. For lucidity of presentation, attractiveness of treatment and, important above all, accuracy of statement, it has no rivals, and its author will no doubt often be called blessed by students of all degrees of advancement in the art for whom he has facilitated the acquisition of new information or recalled in pleasing manner that long forgotten.

The system of the work is purely regional, and each section of the body is considered first as a whole from the standpoint of surface form and topography, with a careful enumeration of surgical landmarks and their significance, and then its detailed structure is described with continual excursions into the domain of diagnosis and therapeutics, illuminated by frequent examples of actual cases, and the whole handled with a light but sure touch, utterly opposed to the frigid style, or rather lack of it, characteristic of anatomical literature. Since through the limitations of its subject a work of this nature perforce excels through its manner rather than its matter, excerpts are hardly necessary in discussing it. On the other hand, in the present instance criticism also is disarmed and the reviewer finds but few points of vantage for his blue pencil. The captious might perhaps consider that to the description of the manner of introducing the aural speculum in the adult, on p. 48, should be appended the statement that in infants the auricle must be pulled outward and *down*; that the discussion of the axilla (p. 169) might have been made a little more extended as regards its dissection in amputation of the breast; that usage has made the expression "cystoscopy of the bladder" (p. 401) tautological; but these are all very minor matters that are lost in the multitude of excellencies to be found on every page.

A special word should be accorded to the illustrations, which are all fresh and unhackneyed, and present instructive relationships that no doubt will often seem novel to those who think the last word has been said in regard to topographical anatomy. The press and lithographic work are also far above the usual order, and the volume is one that it is a pleasure to commend to the attention of surgeon, physician and to the student of medicine.